

Annual Report of Monitoring at Morrill, Kansas, in 2012

Environmental Science Division



United States Department of Agriculture

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by
Applied Geosciences and Environmental Management Section
Environmental Science Division, Argonne National Laboratory

May 2013



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Notation

AGEM	Applied Geosciences and Environmental Management
AMSL	above mean sea level
BGL	below ground level
°C	degree(s) Celsius
CCC	Commodity Credit Corporation
CD	compact disc
DO	dissolved oxygen
EPA	U.S. Environmental Protection Agency
ft	foot (feet)
gal	gallon(s)
hr	hour(s)
in.	inch(es)
KDHE	Kansas Department of Health and Environment
L	liter(s)
µg/kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
µS/cm	microsiemen(s) per centimeter
mg/L	milligram(s) per liter
mi	mile(s)
min	minute(s)
mV	millivolt(s)
ORP	oxidation-reduction potential
RBSL	risk-based screening level
SOP	standard operating procedure
TOC	top of casing
USDA	U.S. Department of Agriculture
VOC	volatile organic compound
yr	year(s)

Annual Report of Monitoring at Morrill, Kansas, in 2012

1 Introduction and Background

Carbon tetrachloride contamination in groundwater at Morrill, Kansas, was initially identified in 1985 during statewide testing of public water supply wells for volatile organic compounds (VOCs). High levels of nitrate were also present in the public water supply wells. The city of Morrill is located in Brown County in the northeastern corner of the state, about 7 mi east of Sabetha (Figure 1.1). The population of Morrill as of the 2010 Census was approximately 230 (down from 277 in 2000). All residents of Morrill now obtain their drinking water from the Sabetha municipal water system via a pipeline constructed in 1991.

From 1922 to 1991, eight different public water supply wells served the Morrill municipal system. Because of poor water quality, use of the public wells was discontinued over time. The water quality problems included high nitrate levels attributed to numerous animal feeding operations in the vicinity and application of fertilizer to surrounding agricultural lands, as well as naturally occurring excessive hardness and elevated iron, sulfate, and total dissolved solids concentrations above acceptable levels for potable water supply. At the recommendation of the Kansas Department of Health and Environment (KDHE 1989), use of local groundwater by the city of Morrill as a public municipal water supply was terminated in 1991 because of the high nitrate levels and poor water quality. Public water was subsequently obtained from the Sabetha municipal water system.

Investigations of the carbon tetrachloride and nitrate contamination by the KDHE in 1989, 1994, and 1996 (KDHE 1989; GeoCore 1994a-d, 1996) identified a localized plume of carbon tetrachloride in groundwater extending downgradient from a grain storage facility in the northwestern section of Morrill. No localized source of nitrate contamination was identified. The identified grain storage facility was operated by the Commodity Credit Corporation (CCC), an agency of the U.S. Department of Agriculture (USDA), from 1950 to 1971. After termination of the CCC/USDA grain storage operations in 1971, the property and existing grain bins continued to be used for private grain storage, up to the present time. Prior to 1986, commercial grain fumigants containing carbon tetrachloride were commonly used by the CCC/USDA, as well as private and commercial grain storage operations, to preserve grain.

Because the identified carbon tetrachloride contamination in groundwater could potentially be linked, in part, to historical use of carbon tetrachloride-based fumigants at its former facility, in 2003 the CCC/USDA assumed responsibility for the site investigation of the carbon tetrachloride contamination. The CCC/USDA involvement began with development and implementation of a work plan for a Phase I expedited site characterization (Argonne 2003). That investigation and subsequent investigations (Argonne 2004, 2005a) were performed by the Environmental Science Division of Argonne National Laboratory.

The initial investigation by the CCC/USDA in 2003 determined that soils at the former facility were not impacted by grain fumigation activities. Neither carbon tetrachloride nor chloroform (the primary degradation product of carbon tetrachloride) was detected in near-surface soils or in subsurface soils collected to bedrock. Because no identifiable human health risk was associated with either carbon tetrachloride or chloroform in shallow soils, the conclusion was that no further threat of contamination to groundwater was present.

In September 2005, the CCC/USDA initiated periodic sampling of groundwater, in accord with a program (Argonne 2005b) approved by the KDHE (2005), to monitor carbon tetrachloride concentrations in the groundwater.

Under the KDHE-approved monitoring plan (Argonne 2005b), groundwater was sampled twice yearly for VOCs analyses through 2011. During the initial 2 yr of monitoring, analysis for selected geochemical parameters was also conducted to aid in the evaluation of possible natural contaminant degradation (reductive dechlorination) processes in the subsurface environment. Consistently low levels of dissolved oxygen (DO) and oxidation-reduction potential (ORP) at monitoring well MW1D (in the deepest portion of the contaminated aquifer) and the presence of chloroform (the primary degradation product of carbon tetrachloride) suggested that some degree of reductive dechlorination was occurring.

High carbon tetrachloride concentrations in groundwater (maximum 390 µg/L in a sample collected from monitoring well MW3S — located on the former CCC/USDA property — in 1995 [GeoCore 1996]) have declined significantly during long-term monitoring conducted initially by the KDHE and currently by the CCC/USDA. The present maximum levels of < 60 µg/L confirm that no continuing soil source remains at the former CCC/USDA facility. Nevertheless, carbon tetrachloride concentrations exceeding the KDHE Tier 2 risk-based screening level (RBSL) of 5.0 µg/L remain.

The analytical results for groundwater sampling events at Morrill in 2005-2011 were documented previously (Argonne 2006, 2007a,b, 2008a,b, 2009, 2010, 2011, 2012). Those results consistently demonstrated the presence of carbon tetrachloride contamination, at concentrations exceeding the RBSL of 5.0 µg/L, in a groundwater plume extending southward from the former CCC/USDA facility, toward Terrapin Creek at the southern edge of the town.

Terrapin Creek is identified by the KDHE (2001) as tributary segment 308 to Walnut Creek, which in turn is located in the Big Nemaha Subbasin of the Missouri Basin. Walnut Creek is classified by the KDHE (2001) as impaired because of high levels of fecal coliform bacteria. Prevention of further degradation of Terrapin Creek by carbon tetrachloride is the regulatory driver for ongoing monitoring of the carbon tetrachloride plume (KDHE 2007). No trend of increasing carbon tetrachloride concentrations near the creek has been indicated.

In 2006, the CCC/USDA recommended expansion of the approved monitoring program to include the collection and analysis of surface water samples along Terrapin Creek (Argonne 2007a). At the request of the KDHE (2007), locations for both surface water and shallow sediment sampling were discussed with the KDHE in January 2007. An addendum to the existing monitoring plan (Appendix A in the report of 2009 monitoring [Argonne 2010]) and a standard operating procedure for sediment sampling (SOP AGEM-15; Appendix B in Argonne 2010) were submitted to the KDHE on the basis of these discussions and were subsequently approved (KDHE 2008b). To supplement the original scope of the monitoring, in 2007-2011 Argonne also sampled natural vegetation at locations in the contaminant plume and along Terrapin Creek for VOCs analyses.

In August 2010, indoor air sampling was conducted at seven residences, one church, and one business overlying the contaminant plume to evaluate the potential for vapor intrusion. Carbon tetrachloride contamination was not detected.

At the recommendation of the CCC/USDA (Argonne 2012), the KDHE (2012) approved an annual monitoring schedule and also approved discontinuation of vegetation sampling. The March 2012 groundwater and surface water/sediment sampling events reported here were conducted in accord with the monitoring plan (Argonne 2005b) and the addendum to that plan (Appendix A in Argonne 2010). Groundwater sampling occurs in a network of 12 monitoring wells and 3 private wells, at locations approved by the KDHE (2008b). In addition, since 2008,

overflow from the Grimm irrigation well (installed in 2008 just south of Terrapin Creek) has also been sampled.

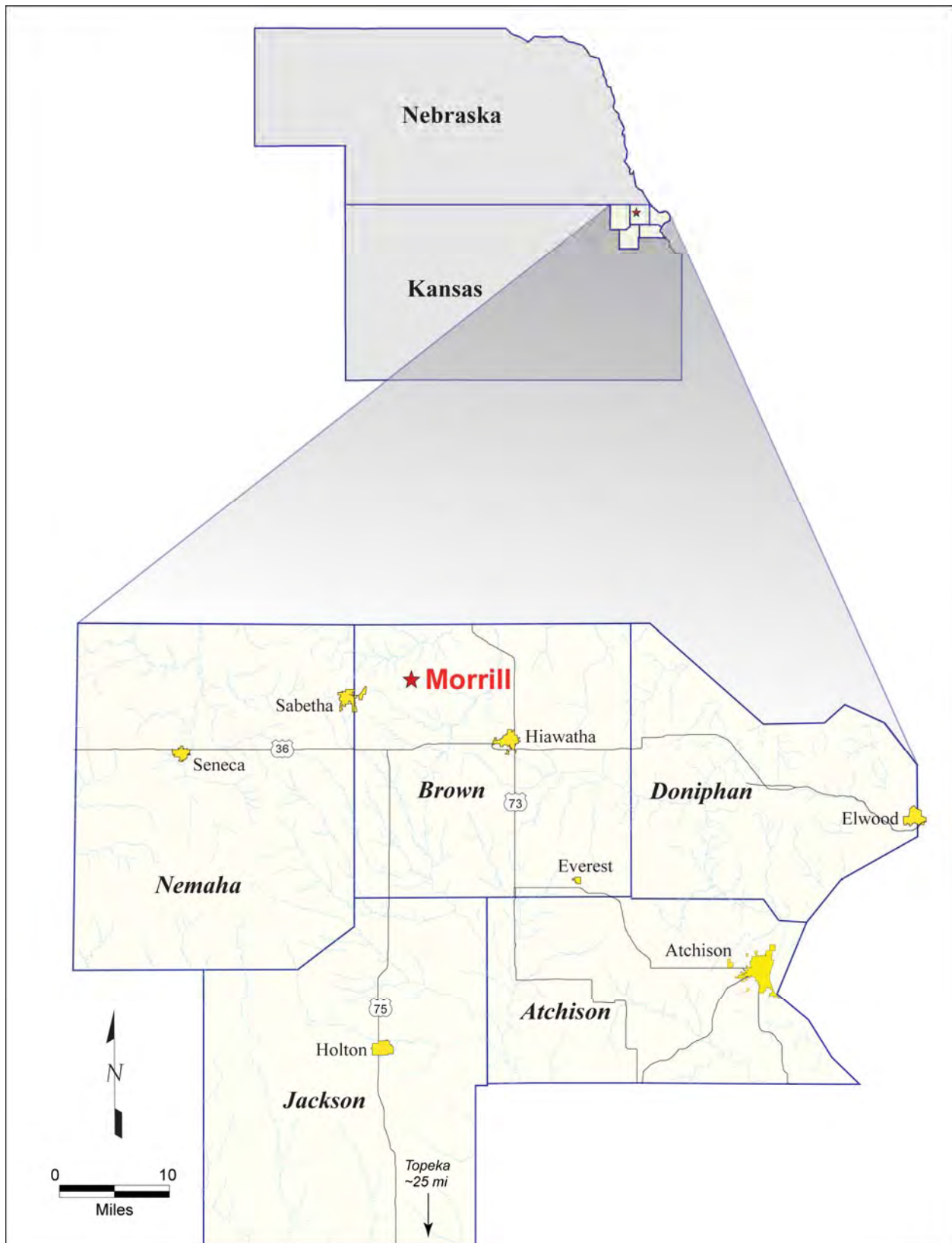


FIGURE 1.1 Location of Brown County and Morrill, Kansas.

2 Sample Collection and Analysis Activities

2.1 Measurement of Groundwater Levels

Data recorders currently installed in wells MW1S-MW4S and MW6S-MW8S are gathering long-term data on the groundwater elevation and gradient at Morrill in order to evaluate daily to seasonal variation. In addition, to calibrate the long-term data and to define the potentiometric surface, depths to groundwater and total well depths from the tops of the well casings are measured periodically in conjunction with the data recorder downloads, as well as during each groundwater sampling event, with an accuracy of ± 0.01 ft.

During the current reporting period, the data recorders were downloaded and water levels were measured manually on January 5, 2012, and August 1, 2012. Similarly, data records were downloaded, and water levels were measured manually on February 18, 2013, after the end of the current reporting period. The February 2013 results are of interest and are reported here because they illustrate water level recovery after a decrease during summer 2012. Water levels were also measured manually in all monitoring wells during the sampling event on March 27-29, 2012.

The groundwater level data are discussed in Section 3.1.

2.2 Monitoring Well and Private Well Sampling and Analyses

Monitoring wells MW1D and MW1S-MW11S and the Stone, Isch, and Rilinger private wells (Figure 2.1) were sampled on March 27-29, 2012.

Samples were collected from monitoring wells by using a low-flow bladder pump. After measurement of water levels, each monitoring point was purged of a small volume, in accord with U.S. Environmental Protection Agency (EPA) procedure EPA/540/S-95/504 (Puls and Barcelona 1996; Yeskis and Zavala 2002) and the equipment manufacturers' instructions. Field measurements of temperature, pH, conductivity, DO, and ORP were taken during purging until the measurements stabilized. Field measurements of iron(II) were made as outlined in the monitoring plan (Argonne 2005b), in accord with procedures in the *Master Work Plan* (Argonne 2002). Samples from the Isch and Rilinger private wells were collected after a 5-min purge with

the dedicated pump. The sample from the Stone private well was collected after purging of the well by bailing.

Prior sampling at well MW1S, which is located near the center of the contaminant plume and is screened over a 40-ft interval, has indicated that a representative sample is not collected by the low-flow sampling procedure. Therefore, since 2008 the well has also been sampled periodically after purging of three well volumes. This comparison sampling is discussed further in Section 3.4.

The sequence of activities during the 2012 sampling event is summarized in Appendix A, Table A.1.

Groundwater samples for VOCs analyses were collected in appropriate laboratory containers, labeled, packaged, and chilled to 4°C by placement in ice-filled coolers. The samples were shipped overnight to the Applied Geosciences and Environmental Management (AGEM) Laboratory at Argonne for VOCs analyses with EPA Method 524.2 (EPA 1995). Separate aliquots of selected samples (chosen in the field) were shipped to TestAmerica Laboratories, Inc., South Burlington, Vermont, for verification VOCs analysis.

The groundwater analysis results are presented and discussed in Section 3.2.

2.3 Surface Water and Sediment Sampling and Analyses

At the direction of the KDHE (2007), surface water samples and corresponding samples of the underlying shallow sediments in the creek bed are routinely collected for VOCs analyses at five locations along Terrapin Creek (Figure 2.2), as outlined in the monitoring plan addendum (Appendix A in Argonne 2010). The sampling is conducted in accord with procedures in the *Master Work Plan* (Argonne 2002) and SOP AGEM-15 (Appendix B in Argonne 2010). Surface water flow in Terrapin Creek south of Morrill originates at the outfall from an earthen dam and retention pond approximately 1,900 ft southwest of the former CCC/USDA facility (Figure 2.2). Surface water and sediment sampling location SMB, which is directly downstream from this outfall, is believed to lie upgradient, or cross-gradient, to groundwater flow (and hence possible contaminant migration) from the vicinity of the former CCC/USDA facility. (See Section 3.1.) Sampling locations SM1-SM4 were selected to lie downgradient and downstream from the

carbon tetrachloride detections identified previously at MW8S and elsewhere in the monitoring well network.

During the 2012 monitoring event, samples of surface water were collected in appropriate containers, labeled, preserved at 4°C, and shipped overnight to the AGEM Laboratory for VOCs analyses with EPA Method 524.2 (EPA 1995). Samples of the shallow creek bed sediments were collected by scooping the materials directly into appropriate laboratory containers. The samples were labeled, preserved on dry ice, and shipped to the AGEM Laboratory for sample preparation and VOCs analyses with modified EPA Methods 5030B and 8260B.

The surface water and sediment analysis results are presented and discussed in Section 3.3.

2.4 Vegetation Sampling and Analyses

In 2007-2011, vegetation samples were collected at locations in the contaminant plume and along Terrapin Creek and its tributaries south and southwest of the former CCC/USDA facility. The locations were selected along the direction of groundwater flow from the former facility. Vegetation samples were collected at 18 locations in July 2007 (Argonne 2008a), at 25 locations in July 2008 (Argonne 2009), and at 22 locations in August 2009 (Argonne 2010). In July 2010 and July 2011, branch tissue samples were collected at 42 locations from mature ash, cottonwood, elm, hackberry, juniper, maple, mulberry, oak, Osage orange, pear, pine, walnut, and willow trees (Argonne 2011, 2012).

Sporadic detections of carbon tetrachloride at trace levels in vegetation samples over time confirmed uptake of carbon tetrachloride in the tree tissues, but declining concentrations in the groundwater precluded identification of a trend in the vegetation results. With the approval of the KDHE (2012), sampling of native vegetation has been terminated as part of the overall monitoring program.

2.5 Handling and Disposal of Investigation-Derived Waste

The water generated as potentially contaminated investigation-derived waste was containerized on-site. The accumulated purge water was sampled on October 22, 2012 (along

with wastewaters from several other CCC/USDA sites in Kansas), and analyzed by Pace Analytical Services, Inc., Lenexa, Kansas, on October 26, 2012, for carbon tetrachloride with EPA Method 5030/8260, for ethylene dibromide with EPA Method 504.1, and for nitrate/nitrite nitrogen with EPA Method 353.2. The target compounds were not detected. The laboratory results are in Supplement 1, on the compact disc (CD) inside the back cover of this report. The water was delivered on November 2, 2012 (together with purge water from several other CCC/USDA investigation sites in Kansas), for disposal at the Sabetha publicly owned wastewater treatment plant. Documentation for the disposal is also in Supplement 1.

2.6 Quality Control for Sample Collection, Handling, and Analysis

The quality control/quality assurance procedures followed during the 2012 monitoring events are described in detail in the *Master Work Plan* (Argonne 2002) and SOP AGEM-15 (Appendix B in Argonne 2010). These procedures are summarized as follows:

- Sample collection and handling activities were monitored by the documentation of samples as they were collected and the use of chain-of-custody forms and custody seals to ensure sample integrity during handling and shipment.
- Samples designated for VOCs analyses were received with custody seals intact and at the appropriate preservation temperature. All samples were analyzed within the required holding times.
- Quality control samples (field blanks, equipment rinsates, and trip blanks) collected to monitor sample collection and handling activities were free of carbon tetrachloride contamination. Method blanks used to monitor analytical methodologies were free of carbon tetrachloride and chloroform contamination. Analytical results for quality control samples collected to monitor sample-handling activities are in Appendix B, Table B.1.
- Groundwater samples were analyzed for VOCs at the AGEM Laboratory with the purge-and-trap method on a gas chromatograph-mass spectrometer system (modified EPA Method 524.2). Calibration checks with each sample delivery

group were required to be within $\pm 20\%$ of the standard. Surrogate standard determinations performed on samples and blanks were within the specified range of 80-120% for all samples, in either the initial analysis or a successful reanalysis. Accuracy and precision of the analytical methodology were evident in the analysis of two replicate samples and duplicate analysis of three additional samples, with average relative percent difference values of $< 5\%$ between the initial analysis and the associated quality control analysis for both carbon tetrachloride and chloroform (Appendix B, Table B.2). The groundwater analytical data from the AGEM Laboratory are acceptable for quantitative determination of contaminant distribution.

- In accordance with the procedures defined in the *Master Work Plan* (Argonne 2002), the analyses of water samples at the AGEM Laboratory were verified by a second laboratory. Accordingly, groundwater samples collected during the 2012 monitoring event were submitted to TestAmerica for analysis according to the EPA's Contract Laboratory Program methodology. Complete analytical results for four groundwater samples and one trip blank collected in March 2012 are in sample delivery group 200-10085 in Supplement 2 (on CD). The results are summarized in Appendix B, Table B.3. The results from TestAmerica support the results from the AGEM Laboratory. Samples from MW7S with quantitative levels of carbon tetrachloride compare well between the two laboratories, with a relative percent difference value of 0%. Samples from MW2S, MW4S, and MW8S with trace or nondetectable levels of carbon tetrachloride are also consistent between the two laboratories. Trip blank MRQCTB-W-30127 was found by both laboratories to be free of all contaminants of interest.
- Groundwater samples collected for nitrate analysis were shipped to TestAmerica Laboratories, Inc., University Park, Illinois, for filtration and analysis. Nitrate concentrations were determined by EPA Method 300. This analysis is acceptable for geochemical characterization of nitrate on the basis of the recovery of known concentrations of the analyte of concern in laboratory control samples analyzed with the groundwater samples. The analytical data are in Supplement 3 (on CD).

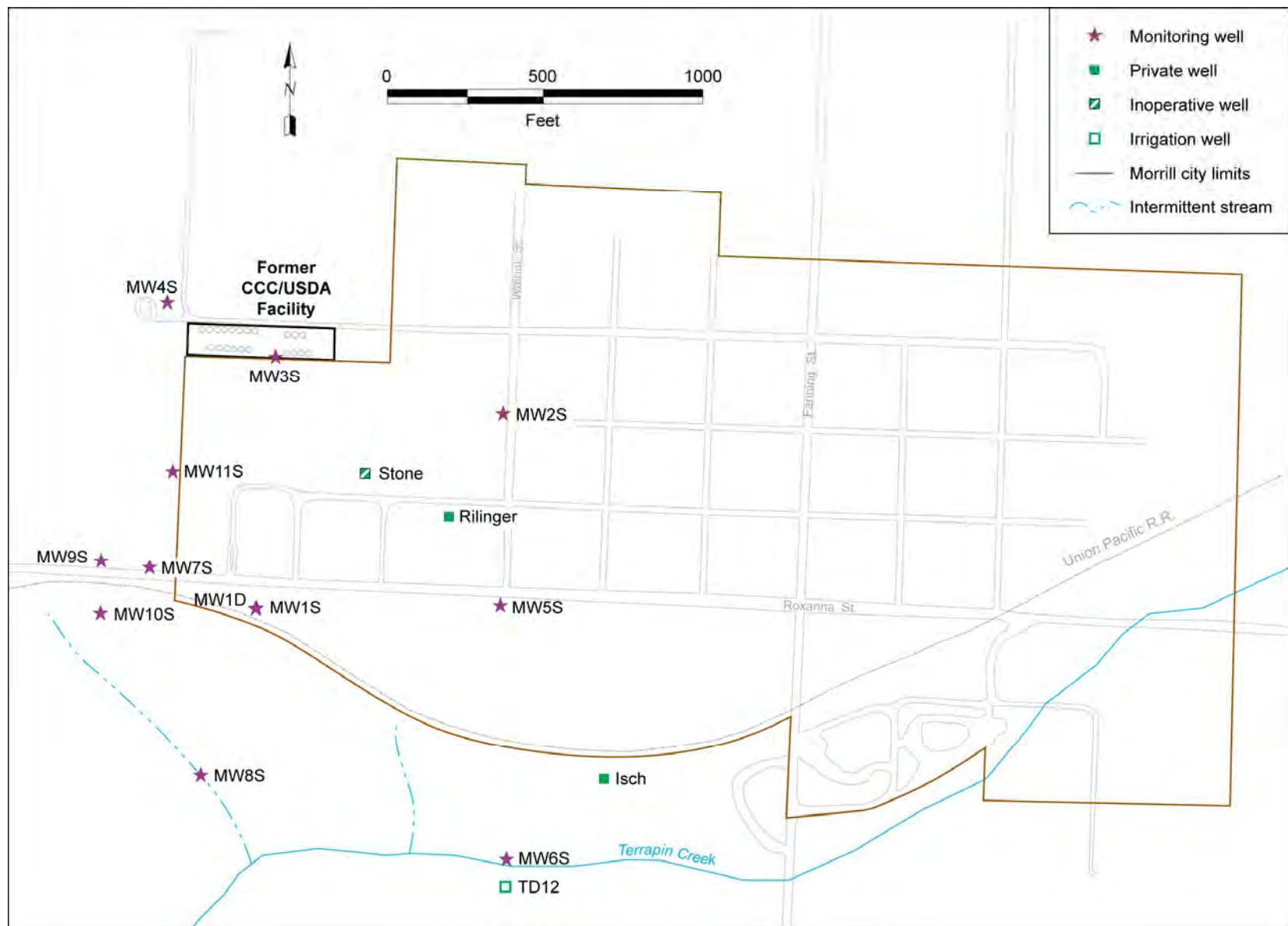


FIGURE 2.1 Groundwater monitoring network in 2012.

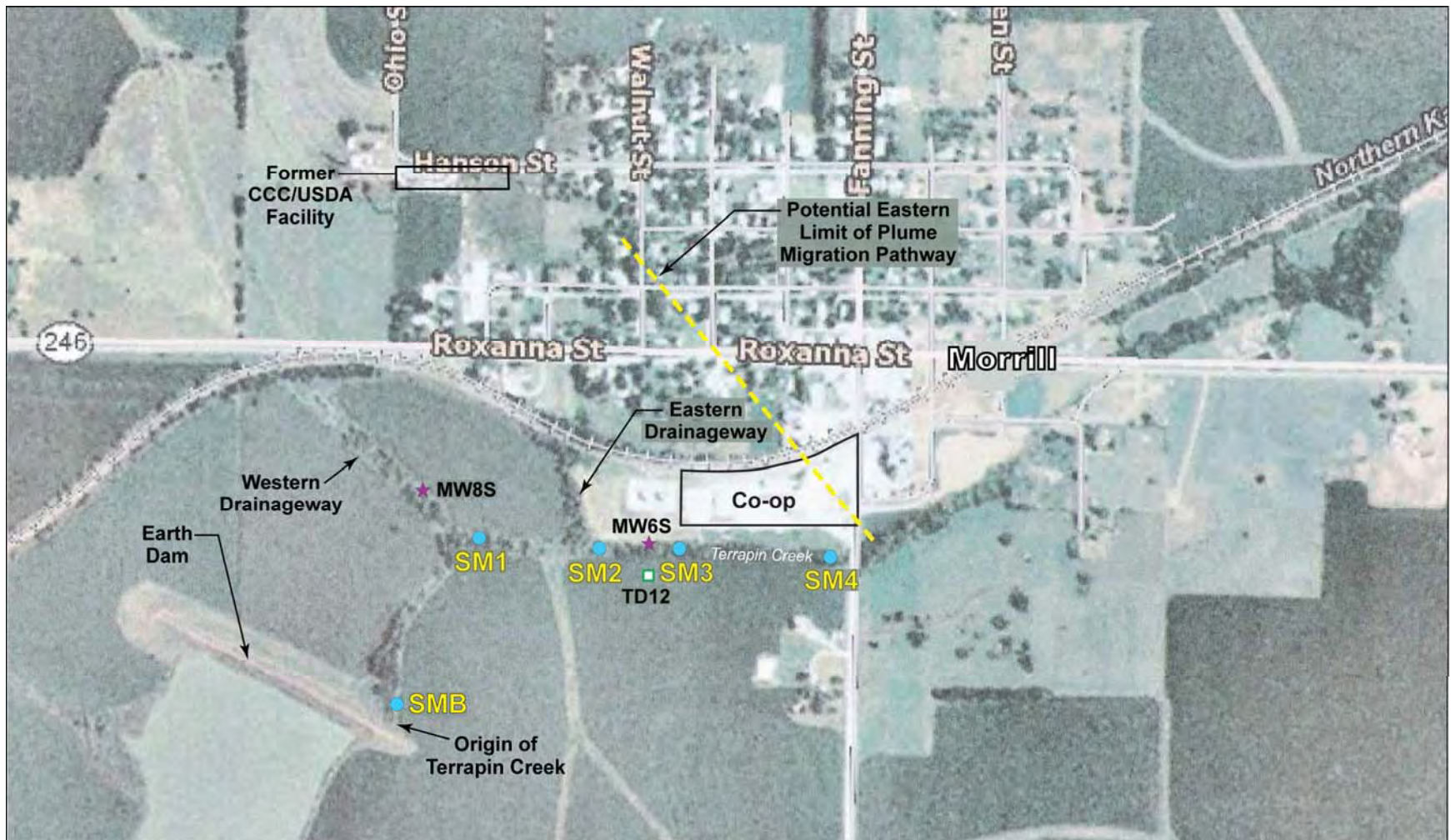


FIGURE 2.2 Locations of surface water and creek bed sediment sampling along Terrapin Creek in 2012.

3 Results and Discussion

3.1 Groundwater Level Data

Depths to groundwater were measured manually on January 5 and August 1, 2012, in conjunction with data recorder downloads, and on March 27-29, 2012, in conjunction with the annual groundwater sampling event. These data, along with hand-measured levels for February 18, 2013, are in Table 3.1. Monitoring well MW8S, which is along the NW-SE tributary that feeds into Terrapin Creek, could not be located in August 2012, because of vegetation overgrowth as high as 8 ft. No hand measurements were taken at well MW8S and at well MW10S in February 2013, because of safety concerns related to a sizeable herd of cattle pastured in the area. Water level data were recovered from the data logger in well MW8S in early March 2013, however, to provide a complete record for 2012.

The data for February 18, 2013, are included in the discussion here because they illustrate a significant seasonal trend in water levels.

As in previous years, groundwater flow during 2012 (Figure 3.1) was predominantly to the south, from the vicinity of the former CCC/USDA facility toward Terrapin Creek. Data shown in Figure 3.1 are for August 1, 2012, but the potentiometric surface maps constructed for the data gathered on January 5 and March 27-29 (not shown) are similar.

Hydrographs recorded in January 2011-February 2013 for the Morrill monitoring wells (Figure 3.2a,b) illustrate rises in groundwater levels reflecting seasonal responses to spring precipitation and recharge, followed by generally declining groundwater levels during the remainder of the year. Similar seasonal responses have been observed annually throughout Argonne's investigations at Morrill.

The hydrograph for well MW6S (Figure 3.2a,b) is marked by a series of sharp downward "spikes" that apparently correspond with operation of the nearby Grimm irrigation well, to the south across Terrapin Creek (Figure 2.1). The MW6S trace indicates that the Grimm well began operation earlier in 2012 than in 2011 and that it pumped nearly continuously through July, rather than intermittently for relatively short durations.

Also shown in Figure 3.2a,b are water level data for wells MW1D and MW11S, measured manually at the time of the data logger downloads. The responses of these two wells are of particular interest because they are screened in or near the stratigraphically deep portion of the aquifer unit that is penetrated by the Grimm well. The manual measurements for these wells suggest that their water levels were affected significantly by sustained pumping of the Grimm well in 2012 (Figure 3.2b). The February 2013 measurements (Figure 3.2b) indicate that the water levels in these wells recovered in the absence of Grimm well pumping. Data loggers were installed in wells MW1D and MW11S on February 18, 2013, to investigate this possible relationship further.

The water level map in Figure 3.1 illustrates an abrupt drop in water levels at the southern and western margins of the observation area (MW6S, MW9S, MW10S) that has not been observed previously (for example, on January 5, 2012; Figure 3.1 in Argonne 2012). Wells MW6S, MW9S, and MW10S are screened in a stratigraphically deeper part of the aquifer system than are the other monitoring wells (MW1S-MW5S and MW7S). Table 3.2 identifies the screened intervals for the monitoring wells and compares the water level declines in the wells from January 5, 2012, to August 1, 2012. Figure 3.3 illustrates the stratigraphic relationships among the screened intervals in these wells. The comparison in Table 3.2 indicates decreases in water levels of 13-23 ft for the deeper-screened wells, versus decreases of 4-6 ft for the shallower-screened wells. These observations, together with the hydrograph for MW6S and the observations noted above for wells MW1D and MW11S, suggest that groundwater withdrawal in response to sustained pumping of the Grimm well might exert a fairly widespread influence on the groundwater levels in the deeper parts of the aquifer system. Sustained pumping might therefore temporarily enhance the vertical gradients in the stratigraphic column across the observation area by preferentially drawing water from the deeper part of the section.

Very little flow was observed in Terrapin Creek on August 1, 2012.

3.2 Groundwater Analysis Results

The analytical data for VOCs in the groundwater samples collected in March 2012 are in Table 3.3, together with data for the previous sampling events conducted under the KDHE-approved monitoring plan (Argonne 2005b). The results of field measurements for the groundwater samples are in Table 3.4. The March 2012 data for carbon tetrachloride in groundwater are illustrated in Figure 3.4. The October 2011 data are also shown for comparison.

In March 2012 (Figure 3.4), carbon tetrachloride was detected at 9 of the 15 monitoring locations, at concentrations ranging from $< 1 \mu\text{g/L}$ (at the Rilinger and Stone private wells and two monitoring wells) to a maximum of $58 \mu\text{g/L}$ (at well MW3S on the former CCC/USDA property). Low levels of chloroform ($< 1\text{--}1.9 \mu\text{g/L}$) were detected in 5 wells (Table 3.3).

The analytical data for nitrate in the groundwater samples collected in March 2012 are in Table 3.5. Nitrate was detected at 14 of the 16 monitoring locations sampled, with the highest concentration at MW7S (22 mg/L). Given the absence of an apparent trend in the concentrations of nitrate or a pattern in the distribution of detections, these results are interpreted as reflecting regional nitrate contamination resulting from agricultural activities in the area. The results give no evidence for a point source of nitrate contamination.

3.3 Surface Water and Sediment Analysis Results

Table 3.6 presents the results of VOCs analyses of the surface water and shallow sediment samples collected along Terrapin Creek. No carbon tetrachloride was detected in the surface water samples collected at locations shown in Figure 2.2, at an analytical method detection limit of $0.1 \mu\text{g/L}$. Similarly, no carbon tetrachloride was identified in the associated sediment samples at an analytical method detection limit of $1.0 \mu\text{g/kg}$. The 2012 results therefore indicate that the surface waters and underlying sediments of Terrapin Creek remain uncontaminated by carbon tetrachloride.

3.4 Comparison of Analytical Results for Samples Collected after Low-Flow Purging and after Purging of Three Well Volumes

Of particular concern at Morrill throughout the monitoring program has been the applicability of the low-flow sampling method for the wells installed by the KDHE in 1995 with screen intervals of 30-40 ft. At the request of the KDHE (2008a), selected wells were sampled in October 2008 by using both the low-flow purging technique and the three-well-volume purging technique to confirm the suitability of the low-flow method for groundwater sampling at Morrill. As reported previously (Argonne 2009), samples were collected by both methods in October 2008 from wells MW1S, MW2S, and MW3S, as well as from well MW11S (installed by Argonne in 2004 with a 15-ft screen). Results for all pairs except the MW1S samples compared favorably; the low-flow results for well MW1S (centrally located in the plume) were

dramatically lower than the three-volume-purge results. Low-flow results for MW1S in October 2008 were therefore considered non-representative, and the value for the sample obtained after purging of three well volumes was honored instead (Argonne 2009). Sampling conducted in later years has continued this evaluation of the suitability of the low-flow sampling method.

In March 2012, sampling of well MW1S with the low-flow procedure resulted in a trace carbon tetrachloride detection estimated at 0.3 µg/L (Table 3.3). Subsequent sampling with the three-volume-purge method resulted in a carbon tetrachloride detection of 22 µg/L. This higher concentration is considered representative of the contaminant level at this location. This was the fifth sampling event (October 2008, September 2009, April 2010, October 2011, and March 2012) in which a similar pattern was observed for well MW1S.

To investigate an alternative method for sampling well MW1S, a passive diffusion bag sampler was deployed in the well during the March 2012 sampling. This sampler will be retrieved during the spring 2013 sampling, and the results will be compared with the results for the three-well-volume purging method.

TABLE 3.1 Hand-measured groundwater levels in January 2012-February 2013.

Well	Top of Casing Elevation (ft AMSL)	January 5, 2012		March 27-29, 2012		August 1, 2012 ^a		February 18, 2013 ^b	
		Depth to Water (ft BGL)	Groundwater Elevation (ft AMSL)	Depth to Water (ft BGL)	Groundwater Elevation (ft AMSL)	Depth to Water (ft BGL)	Groundwater Elevation (ft AMSL)	Depth to Water (ft BGL)	Groundwater Elevation (ft AMSL)
MW1S	1124.68	24.61	1100.07	20.10	1104.58	30.03	1094.65	30.62	1094.06
MW1D	1124.63	31.90	1092.73	30.50	1094.13	62.07	1062.56	33.85	1090.78
MW2S	1137.07	33.25	1103.82	31.45	1105.62	37.86	1099.21	42.25	1094.82
MW3S	1135.76	25.95	1109.81	23.95	1111.81	30.02	1105.74	35.86	1099.90
MW4S	1143.61	36.48	1107.13	35.10	1108.51	40.30	1103.31	46.16	1097.45
MW5S	1122.21	22.38	1099.83	20.60	1101.61	28.16	1094.05	30.41	1091.80
MW6S	1090.97	6.03	1084.94	6.38	1084.59	18.60	1072.37	6.23	1084.74
MW7S	1119.86	16.86	1103.00	15.35	1104.51	21.07	1098.79	23.74	1096.12
MW8S	1098.53	2.57	1095.96	1.38	1097.15	—	—	—	—
MW9S	1118.31	22.76	1095.55	23.19	1095.12	45.38	1072.93	25.95	1092.36
MW10S	1110.78	12.48	1098.30	12.76	1098.02	33.32	1077.46	—	—
MW11S	1133.08	36.88	1096.20	36.46	1096.62	49.45	1083.63	41.60	1091.48

^a On August 1, 2012, well MW8S could not be located because of tall vegetation.

^b On February 18, 2013, wells MW8S and MW10S were inaccessible because of cattle in the area.

TABLE 3.2 Comparison of hand-measured groundwater levels in wells screened in stratigraphically shallower and deeper parts of the aquifer system.

Well	Top of Casing Elevation (ft AMSL)	Screen Interval (ft BGL)	Screen Interval (ft AMSL)	Groundwater Elevation (ft AMSL) on Date Indicated						Decrease 1/5/12 to 8/1/12 (ft AMSL)
				4/28/10	10/1/10	4/13/11	1/5/12	3/27-29/12	8/1/12	
Wells with stratigraphically shallower screens										
MW1S	1125	11-51	1114-1074	1109	1102	1097	1100	1105	1095	5
MW2S	1137	13-53	1124-1084	1115	1105	1100	1104	1106	1099	5
MW3S	1136	18-48	1118-1088	1119	1111	1103	1110	1112	1106	4
MW4S	1144	17-47	1127-1097	1118	1110	1101	1107	1109	1103	4
MW5S	1122	15-55	1107-1067	1112	1102	1096	1100	1101	1094	6
MW7S	1120	20-45	1100-1075	1112	1105	1099	1103	1105	1099	4
Wells with stratigraphically deeper screens										
MW6S	1091	10-25	1081-1066	1086	1086	1085	1085	1085	1072	13
MW9S	1118	39-54	1079-1064	1101	1097	1094	1096	1095	1073	23
MW10S	1111	30-45	1081-1066	1102	1098	1097	1098	1098	1077	21

TABLE 3.3 Results of analyses at the AGEM Laboratory for volatile organic compounds in groundwater samples collected in 2003-2012. Shading indicates sample collection with the low-flow procedure.

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Concentration (µg/L)			Comment	Sample
								Carbon Tetrachloride	Chloroform	Methylene Chloride		
MW1S	11-51	10/23/03	30.4	54.0	70	gal	—	33	1.6	ND ^a		MRMW1S-W-16422
MW1S	11-51	6/2/04	27.0	53.9	53	gal	—	19	0.9	ND		MRMW1S-W-16461
MW1S	11-51	9/13/05	24.2	53.9	57	gal	—	35	1.7	ND		MRMW1S-W-19259
MW1S	11-51	3/22/06	29.0	54.0	48	gal	—	40	1.8	ND		MRMW1S-W-20008
MW1S	11-51	9/20/06	26.8	54.0	55	gal	—	23	0.9 J ^b	ND		MRMW1S-W-22495
MW1S	11-51	3/21/07	25.8	54.0	55	gal	—	23	1.1	ND		MRMW1S-W-16488
MW1S	11-51	10/1/07	21.7	54.0	63	gal	—	56	2.7	ND		MRMW1S-W-16595
MW1S	11-51	4/14/08	16.2	54.0	5.5	L	—	0.3 J	ND	ND	April monitoring.	MRMW1S-W-23230
MW1S	11-51	4/22/08	16.0	54.0	6.3	L	—	0.2 J	ND	ND	Confirm low carbon tetrachloride.	MRMW1S-W-23259
MW1S	11-51	5/1/08	—	—	3.2	L	22.0	ND	ND	ND	Top of screen.	MRMW1S-22-W-23275
MW1S	11-51	5/1/08	—	—	3.2	L	27.0	ND	ND	ND	Middle of screen.	MRMW1S-27-W-23276
MW1S	11-51	5/1/08	—	—	4.3	L	48.0	0.3 J	ND	ND	Bottom of screen.	MRMW1S-48-W-23277
MW1S	11-51	10/20/08	25.8	54.0	6.0	L	31.0	0.7 J	ND	ND	Low flow.	MRMW1S-W-27620
MW1S	11-51	10/21/08	—	—	—	—	—	35	1.8	ND	Full purge.	MRMW1S-W-27649
MW1S	11-51	4/24/09	24.4	54.0	5.0	L	39.2	ND	ND	ND		MRMW1S-W-27652
MW1S	11-51	9/3/09	19.0	54.0	8.0	L	35.0	ND	ND	ND	Low flow.	MRMW1S-W-29942
MW1S	11-51	9/4/09	19.3	51.2	244	L	50.0	34	1.7	ND	Three well volumes	MRMW1S-W-29971
MW1S	11-51	4/7/10	11.7	51.3	7.0	L	16.6	ND	ND	ND	Top of screen.	MRMW1ST-W-29981
MW1S	11-51	4/7/10	11.6	51.3	6.0	L	31.5	ND	ND	ND	Middle of screen.	MRMW1SM-W-29980
MW1S	11-51	4/7/10	11.7	51.3	6.0	L	46.3	ND	ND	ND	Bottom of screen.	MRMW1SB-W-29979
MW1S	11-51	4/7/10	11.5	51.3	80	gal	49.0	21	1.2	ND	Three well volumes.	MRMW1S3X-W-29982
MW1S	11-51	9/22/10	19.9	54.0	10	L	31.0	1.6	ND	ND	Low flow.	MRMW1S-W-30010
MW1S	11-51	4/20/11	23.5	54.0	6.5	L	37.0	0.3 J	ND	ND	Low flow.	MRMW1S-W-30038
MW1S	11-51	10/4/11	21.8	54.0	8.0	L	34.9	1.7	ND	ND	Low flow.	MRMW1S-W-30067
MW1S	11-51	10/12/11	22.1	54.0	6.0	L	36.6	1.5	ND	ND	Low flow.	MRMW1S-W-30091
MW1S	11-51	10/12/11	22.4	54.0	65	gal	49.0	23	1.2	ND	Three well volumes.	MRMW1S3X-W-30093
MW1S	11-51	3/29/12	20.1	54.0	8.0	L	25.0	ND	ND	ND	Top of screen.	MRMW1SU-W-30099
MW1S	11-51	3/29/12	20.1	54.0	8.0	L	25.0	ND	ND	ND	Laboratory duplicate.	MRMW1SU-W-30099DUP
MW1S	11-51	3/29/12	20.2	54.0	8.0	L	35.0	0.3 J	ND	ND	Middle of screen.	MRMW1SM-W-30100
MW1S	11-51	3/29/12	20.2	54.0	5.5	L	46.0	ND	ND	ND	Base of screen.	MRMW1SL-W-30101
MW1S	11-51	3/29/12	20.2	54.0	68	gal	50.0	22	1.2	ND	Three well volumes.	MRMW1S3X-W-30102
MW1D	63-88	10/22/03	28.4	88.5	92	gal	—	ND	ND	ND		MRMW1D-W-16421
MW1D	63-88	6/2/04	26.8	88.6	140	gal	—	ND	ND	ND		MRMW1D-W-16458
MW1D	63-88	9/13/05	23.7	88.6	200	gal	—	ND	ND	ND		MRMW1D-W-16518
MW1D	63-88	3/19/06	26.9	88.6	112	gal	—	ND	ND	0.4 J B ^c		MRMW1D-W-19986
MW1D	63-88	9/20/06	25.5	88.8	125	gal	—	ND	ND	ND		MRMW1D-W-16532
MW1D	63-88	3/21/07	25.8	88.8	125	gal	—	ND	ND	ND		MRMW1D-W-16487
MW1D	63-88	10/1/07	22.8	89.4	130	gal	—	ND	ND	ND		MRMW1D-W-16596
MW1D	63-88	4/14/08	29.5	89.0	6.0	L	—	ND	ND	ND		MRMW1D-W-23231
MW1D	63-88	10/20/08	30.4	89.0	7.0	L	75.5	ND	ND	ND		MRMW1D-W-27621
MW1D	63-88	4/24/09	31.0	89.0	7.0	L	75.5	ND	ND	ND		MRMW1D-W-27653
MW1D	63-88	9/3/09	27.1	89.0	6.5	L	75.5	ND	ND	ND		MRMW1D-W-29943
MW1D	63-88	4/6/10	24.7	89.0	8.5	L	75.5	ND	ND	ND		MRMW1D-W-29983
MW1D	63-88	9/22/10	27.9	89.0	9.0	L	75.5	ND	ND	ND		MRMW1D-W-30011

TABLE 3.3 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Concentration (µg/L)			Comment	Sample
								Carbon Tetrachloride	Chloroform	Methylene Chloride		
MW1D	63-88	4/20/11	30.2	89.0	5.5	L	75.5	ND	ND	ND		MRMW1D-W-30039
MW1D	63-88	10/4/11	29.1	89.0	6.5	L	75.5	ND	ND	ND		MRMW1D-W-30068
MW1D	63-88	10/4/11	29.1	89.0	6.5	L	75.5	ND	ND	ND	Replicate.	MRMW1DDUP-W-30084
MW1D	63-88	3/28/12	30.5	89.0	5.8	L	75.5	ND	ND	ND		MRMW1D-W-30103
MW1D	63-88	3/28/12	30.5	89.0	5.8	L		ND	ND	ND	Replicate.	MRMW1DDUP-W-30118
MW2S	13-53	10/22/03	42.2	53.4	—	—	—	ND	ND	ND	Purged dry and sampled.	MRMW02-W-16419
MW2S	13-53	6/2/04	37.4	53.3	31	gal	—	ND	ND	ND		MRMW2S-W-16459
MW2S	13-53	9/14/05	33.7	53.3	38	gal	—	ND	ND	ND		MRMW2S-W-19264
MW2S	13-53	3/21/06	40.9	53.3	27	gal	—	ND	ND	ND		MRMW2S-W-19992
MW2S	13-53	9/18/06	36.5	53.3	28	gal	—	ND	ND	ND		MRMW2S-W-22488
MW2S	13-53	3/22/07	35.8	53.3	35	gal	—	ND	ND	ND		MRMW2S-W-16559
MW2S	13-53	10/3/07	31.2	53.4	44	gal	—	ND	ND	ND		MRMW2S-W-16587
MW2S	13-53	4/15/08	23.6	53.4	2.2	L	—	ND	ND	ND		MRMW2S-W-23232
MW2S	13-53	10/21/08	33.7	53.5	5.0	L	33.0	ND	ND	ND	Low flow.	MRMW2S-W-27622
MW2S	13-53	10/21/08	—	—	—	—	—	ND	ND	ND	Full purge.	MRMW2S-W-27652
MW2S	13-53	4/23/09	33.2	53.5	6.5	L	43.4	ND	0.6 J	ND		MRMW2S-W-27654
MW2S	13-53	9/3/09	29.4	53.5	5.4	L	41.2	ND	ND	ND		MRMW2S-W-29944
MW2S	13-53	4/6/10	18.6	52.4	6.5	L	36.0	ND	ND	ND		MRMW2S-W-29984
MW2S	13-53	9/22/10	31.3	53.0	7.0	L	33.0	ND	ND	ND		MRMW2S-W-30012
MW2S	13-53	4/20/11	36.0	53.5	8.0	L	44.5	ND	ND	ND		MRMW2S-W-30040
MW2S	13-53	4/20/11	36.0	53.5	8.0	L	44.5	ND	ND	ND	Replicate.	MRMW2SDUP-W-30055
MW2S	13-53	10/4/11	32.7	53.5	7.5	L	42.6	ND	ND	ND		MRMW2S-W-30069
MW2S	13-53	3/28/12	31.5	53.5	7.0	L	42.5	ND	ND	ND		MRMW2S-W-30104
MW3S	18-48	10/23/03	36.5	47.8	73	gal	—	89	2.7	ND		MRMW03-W-16423
MW3S	18-48	6/2/04	30.7	47.5	34	gal	—	110	3.2	ND		MRMW3S-W-16462
MW3S	18-48	9/13/05	25.6	47.6	50	gal	—	101	3.2	ND		MRMW3S-W-19261
MW3S	18-48	3/23/06	35.6	47.7	28	gal	—	91	2.6	ND		MRMW3S-W-19994
MW3S	18-48	9/20/06	29.4	47.8	22	gal	—	49	1.5	ND		MRMW3S-W-22496
MW3S	18-48	3/22/07	26.2	47.8	45	gal	—	84	2.3	ND		MRMW3S-W-16563
MW3S	18-48	10/3/07	22.7	47.9	50	gal	—	61	2.0	ND		MRMW3S-W-16585
MW3S	18-48	4/14/08	17.0	47.8	3.3	L	—	8.2	0.4 J	ND	April monitoring.	MRMW3S-W-23233
MW3S	18-48	4/22/08	15.8	47.8	6.5	L	—	0.7 J	ND	ND	Confirm low carbon tetrachloride.	MRMW3S-W-23260
MW3S	18-48	5/1/08	—	—	2.6	L	26.0	0.4 J	ND	ND	Top of screen.	MRMW3S-26-W-23269
MW3S	18-48	5/1/08	—	—	2.8	L	38.0	0.4 J	ND	ND	Middle of screen.	MRMW3S-38-W-23270
MW3S	18-48	5/1/08	—	—	3.2	L	45.0	0.5 J	ND	ND	Bottom of screen.	MRMW3S-45-W-23271
MW3S	18-48	10/21/08	27.0	47.8	4.2	L	33.0	55	1.4	ND	Low flow.	MRMW3S-W-27623
MW3S	18-48	10/21/08	—	—	—	—	—	63	1.6	ND	Full purge.	MRMW3S-W-27650
MW3S	18-48	4/23/09	26.7	47.8	5.0	L	37.3	29	1.4	ND		MRMW3S-W-27655
MW3S	18-48	9/3/09	22.4	47.8	5.5	L	35.2	30	1.1	ND	Low flow.	MRMW3S-W-29945
MW3S	18-48	9/4/09	22.6	47.8	190	L	46.0	28	0.9 J	ND	Three well volumes	MRMW3S-W-29972
MW3S	18-48	4/6/10	12.1	47.8	6.0	L	33.0	3.5	0.2 J	ND		MRMW3S-W-29985
MW3S	18-48	9/23/10	23.7	47.8	7.0	L	33.0	47	1.6	ND		MRMW3S-W-30013
MW3S	18-48	4/20/11	32.1	47.8	6.2	L	40.0	33	1.2	ND		MRMW3S-W-30041
MW3S	18-48	10/4/11	26.0	47.8	7.0	L	37.0	49	1.8	ND		MRMW3S-W-30070

TABLE 3.3 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Concentration (µg/L)			Comment	Sample
								Carbon Tetrachloride	Chloroform	Methylene Chloride		
MW3S	18-48	3/28/12	24.0	47.8	6.5	L	35.9	58	2.0	ND		MRMW3S-W-30105
MW3S	18-48	3/28/12	24.0	47.8	6.5	L	35.9	57	1.9	ND	Laboratory duplicate.	MRMW3S-W-30105DUP
MW4S	17-47	10/21/03	46.4	47.8	–	–	–	ND	ND	ND	Purged dry and sampled	MRMW04-W-16418
MW4S	17-47	6/4/04	43.2	47.8	10	gal	–	ND	ND	ND		MRMW4S-W-16470
MW4S	17-47	9/14/05	36.2	47.8	8.0	gal	–	ND	ND	ND		MRMW4S-W-19262
MW4S	17-47	3/21/06	44.6	47.7	6.0	gal	–	ND	ND	ND		MRMW4S-W-19993
MW4S	17-47	9/18/06	41.6	47.8	5.3	gal	–	ND	ND	ND		MRMW4S-W-22487
MW4S	17-47	3/22/07	38.7	47.8	6.0	gal	–	ND	ND	ND		MRMW4S-W-16562
MW4S	17-47	10/3/07	31.1	47.7	30	gal	–	0.5 J R ^d	ND	ND		MRMW4S-W-16586
MW4S	17-47	1/11/08	–	–	–	–	–	ND	ND	ND		MOMW4S-W-011108
MW4S	17-47	4/14/08	26.3	47.9	2.5	L	–	ND	ND	ND		MRMW4S-W-23234
MW4S	17-47	10/20/08	36.7	47.8	8.0	gal	–	ND	ND	ND		MRMW4S-W-27624
MW4S	17-47	4/23/09	41.5	47.8	5.0	L	44.7	ND	ND	ND		MRMW4S-W-27656
MW4S	17-47	9/4/09	31.6	47.8	6.0	L	39.3	ND	ND	ND		MRMW4S-W-29946
MW4S	17-47	4/6/10	21.8	47.9	5.5	L	34.8	ND	ND	ND		MRMW4S-W-29986
MW4S	17-47	9/22/10	33.2	47.8	6.0	L	32.0	ND	ND	ND		MRMW4S-W-30014
MW4S	17-47	4/21/11	42.4	47.8	5.0	L	44.7	ND	ND	ND		MRMW4S-W-30042
MW4S	17-47	10/4/11	35.6	47.8	6.0	L	40.9	ND	ND	ND		MRMW4S-W-30071
MW4S	17-47	3/28/12	35.1	47.8	7.2	L	41.5	ND	ND	ND		MRMW4S-W-30106
MW5S	15-55	10/22/03	31.4	55.7	48	gal	–	5.8	ND	ND		MRMW05-W-16420
MW5S	15-55	6/2/04	26.3	55.7	>57	gal	–	7.0	ND	ND		MRMW5S-W-16460
MW5S	15-55	9/13/05	22.7	54.2	75	gal	–	6.3	0.2 J	ND		MRMW5S-W-19260
MW5S	15-55	3/22/06	28.6	54.5	50	gal	–	7.3	0.2 J	ND		MRMW5S-W-19996
MW5S	15-55	9/20/06	25.4	54.6	52	gal	–	6.4	0.3 J	ND		MRMW5S-W-22493
MW5S	15-55	3/22/07	25.1	54.6	58	gal	–	6.5	0.4 J	ND		MRMW5S-W-16569
MW5S	15-55	10/3/07	19.6	54.7	68	gal	–	4.0	0.3 J	ND		MRMW5S-W-16588
MW5S	15-55	4/14/08	11.2	54.6	6.0	L	–	ND	ND	ND	April monitoring.	MRMW5S-W-23235
MW5S	15-55	4/23/08	11.3	54.6	6.5	L	–	ND	ND	ND	Confirm low carbon tetrachloride.	MRMW5S-W-23266
MW5S	15-55	5/1/08	–	–	3.7	L	20.0	ND	ND	ND	Top of screen.	MRMW5S-20-W-23272
MW5S	15-55	5/1/08	–	–	3.4	L	28.0	ND	ND	ND	Middle of screen.	MRMW5S-28-W-23273
MW5S	15-55	5/1/08	–	–	4.0	L	52.0	ND	ND	ND	Bottom of screen.	MRMW5S-52-W-23274
MW5S	15-55	10/21/08	22.5	54.6	7.0	L	35.0	1.7	ND	ND		MRMW5S-W-27625
MW5S	15-55	4/24/09	22.1	54.6	5.5	L	38.4	ND	ND	ND		MRMW5S-W-27657
MW5S	15-55	9/3/09	17.6	54.6	5.5	L	36.3	ND	ND	ND		MRMW5S-W-29947
MW5S	15-55	4/7/10	8.3	54.5	5.5	L	35.0	ND	ND	ND		MRMW5S-W-29987
MW5S	15-55	9/22/10	19.3	55.0	6.5	L	35.0	ND	9.4	ND		MRMW5S-W-30015
MW5S	15-55	4/20/11	24.4	54.6	7.0	L	36.0	1.3	ND	ND		MRMW5S-W-30043
MW5S	15-55	10/4/11	21.1	54.6	6.5	L	38.3	ND	ND	ND		MRMW5S-W-30072
MW5S	15-55	3/28/12	20.6	54.6	7.0	L	37.6	0.6 J	ND	ND		MRMW5S-W-30107
MW6S	10-25	6/3/04	3.3	26.9	45	gal	–	ND	ND	ND		MRMW6S-W-16465
MW6S	10-25	9/14/05	4.7	26.9	43	gal	–	ND	ND	ND		MRMW6S-W-19263
MW6S	10-25	3/20/06	5.4	26.9	43	gal	–	ND	ND	ND		MRMW6S-W-19990
MW6S	10-25	9/18/06	5.5	26.9	27	gal	–	ND	ND	ND		MRMW6S-W-22486

TABLE 3.3 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Concentration (µg/L)			Comment	Sample
								Carbon Tetrachloride	Chloroform	Methylene Chloride		
MW6S	10-25	3/21/07	5.4	26.9	30	gal	–	ND	ND	ND		MRMW6S-W-16486
MW6S	10-25	10/2/07	5.0	26.9	31	gal	–	ND	ND	ND		MRMW6S-W-16583
MW6S	10-25	4/15/08	5.2	26.9	2.5	L	–	ND	ND	ND		MRMW6S-W-23236
MW6S	10-25	10/20/08	5.7	26.9	5.0	L	17.5	ND	ND	ND		MRMW6S-W-27626
MW6S	10-25	4/24/09	6.2	26.9	12	L	17.5	ND	ND	ND		MRMW6S-W-27658
MW6S	10-25	9/4/09	5.9	26.9	5.4	L	17.5	ND	ND	ND		MRMW6S-W-29948
MW6S	10-25	4/6/10	6.2	26.9	8.0	L	17.5	ND	ND	ND		MRMW6S-W-29988
MW6S	10-25	9/22/10	5.5	26.9	8.8	L	17.5	ND	ND	ND		MRMW6S-W-30016
MW6S	10-25	4/20/11	6.5	24.9	8.0	L	17.5	ND	ND	ND		MRMW6S-W-30044
MW6S	10-25	10/4/11	6.5	26.9	6.0	L	17.5	ND	ND	ND		MRMW6S-W-30073
MW6S	10-25	3/28/12	6.4	26.9	7.0	L	17.5	ND	ND	ND		MRMW6S-W-30108
MW7S	20-45	6/3/04	26.7	47.0	40	gal	–	18	ND	ND		MRMW7S-W-16466
MW7S	20-45	9/12/05	17.6	46.9	55	gal	–	43	1.1	ND		MRMW7S-W-19258
MW7S	20-45	3/22/06	22.5	47.0	48	gal	–	21	0.4 J	ND		MRMW7S-W-20000
MW7S	20-45	9/19/06	20.9	47.0	56	gal	–	38	0.7 J	ND		MRMW7S-W-22490
MW7S	20-45	3/20/07	18.0	47.0	50	gal	–	16	0.4 J	ND		MRMW7S-W-16481
MW7S	20-45	10/1/07	12.4	47.0	70	gal	–	8.1	0.2 J	ND		MRMW7S-W-16581
MW7S	20-45	4/14/08	7.7	47.0	1.8	L	–	10	0.3 J	ND		MRMW7S-W-23237
MW7S	20-45	4/23/08	7.8	47.0	11	L	–	8.3	0.2 J	ND		MRMW7S-W-23265
MW7S	20-45	10/20/08	17.2	47.0	6.3	L	32.5	7.9	ND	ND		MRMW7S-W-27627
MW7S	20-45	4/23/09	16.7	47.0	7.0	L	32.5	9.5	ND	ND		MRMW7S-W-27659
MW7S	20-45	9/3/09	13.8	47.0	9.0	L	32.5	8.0	ND	ND		MRMW7S-W-29949
MW7S	20-45	4/6/10	6.4	47.0	5.4	L	32.5	15	0.4 J	ND		MRMW7S-W-29989
MW7S	20-45	9/23/10	14.2	45.0	6.0	L	32.5	6.6	ND	ND		MRMW7S-W-30017
MW7S	20-45	4/20/11	19.7	46.7	6.0	L	32.5	4.4	0.2 J	ND		MRMW7S-W-30045
MW7S	20-45	10/4/11	7.1	47.0	7.0	L	32.5	11	0.3 J	ND		MRMW7S-W-30074
MW7S	20-45	10/4/11	7.1	47.0	7.0	L	32.5	12	0.3 J	ND	Replicate.	MRMW7SDUP-W-30083
MW7S	20-45	3/28/12	15.4	47.0	8.0	L	32.5	12	0.3 J	ND		MRMW7S-W-30109
MW8S	10-25	6/3/04	3.7	26.8	45	gal	–	ND	ND	ND		MRMW8S-W-16464
MW8S	10-25	9/14/05	4.0	26.8	57	gal	–	0.9 J	ND	ND		MRMW8S-W-19265
MW8S	10-25	3/20/06	4.6	26.4	43	gal	–	0.6 J	ND	0.4 J B		MRMW8S-W-19991
MW8S	10-25	9/19/06	4.8	26.8	45	gal	–	1.3	ND	ND		MRMW8S-W-22492
MW8S	10-25	3/20/07	2.6	26.8	49	gal	–	0.6 J	ND	ND		MRMW8S-W-16483
MW8S	10-25	10/2/07	2.2	26.8	48	gal	–	0.8 J	ND	ND		MRMW8S-W-16584
MW8S	10-25	4/15/08	0.7	26.8	5.5	L	–	1.1	ND	ND		MRMW8S-W-23238
MW8S	10-25	10/20/08	3.6	26.8	8.0	L	17.5	1.3	ND	ND		MRMW8S-W-27628
MW8S	10-25	4/23/09	2.3	26.8	6.0	L	17.5	ND	ND	ND		MRMW8S-W-27660
MW8S	10-25	9/3/09	2.9	26.8	8.5	L	17.5	1.9	ND	ND		MRMW8S-W-29950
MW8S	10-25	4/6/10	1.1	26.8	8.0	L	17.5	1.7	ND	ND		MRMW8S-W-29990
MW8S	10-25	9/22/10	2.5	26.8	9.0	L	17.5	1.6	ND	ND		MRMW8S-W-30018
MW8S	10-25	4/20/11	2.7	26.8	9.0	L	17.5	0.2 J	ND	ND		MRMW8S-W-30046
MW8S	10-25	10/4/11	4.9	26.3	9.0	L	17.5	0.6 J	ND	ND		MRMW8S-W-30075
MW8S	10-25	3/28/12	1.4	26.8	6.3	L	17.0	0.4 J	ND	ND		MRMW8S-W-30110
MW9S	38.83-53.83	3/22/06	20.2	58.6	20	gal	–	ND	ND	ND		MRMW9S-W-20004
MW9S	38.83-53.83	9/19/06	18.9	59.0	22	gal	–	ND	ND	ND		MRMW9S-W-22494

TABLE 3.3 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Concentration (µg/L)			Comment	Sample
								Carbon Tetrachloride	Chloroform	Methylene Chloride		
MW9S	38.83-53.83	3/20/07	16.7	59.0	22	gal	—	ND	ND	ND		MRMW9S-W-16480
MW9S	38.83-53.83	10/1/07	14.0	58.6	23	gal	—	ND	ND	ND		MRMW9S-W-16582
MW9S	38.83-53.83	4/14/08	16.6	58.6	2.3	L	—	0.8 J	ND	ND		MRMW9S-W-23239
MW9S	38.83-53.83	10/20/08	21.5	58.5	11	L	46.3	1.1	ND	ND		MRMW9S-W-27629
MW9S	38.83-53.83	4/23/09	21.9	58.5	5.5	L	46.3	1.0	ND	ND		MRMW9S-W-27661
MW9S	38.83-53.83	9/4/09	20.0	58.5	5.0	L	46.3	1.4	ND	ND		MRMW9S-W-29951
MW9S	38.83-53.83	4/6/10	16.5	58.5	6.0	L	46.3	1.9	ND	ND		MRMW9S-W-29991
MW9S	38.83-53.83	9/22/10	21.2	58.8	7.0	L	46.3	1.9	ND	ND		MRMW9S-W-30019
MW9S	38.83-53.83	4/20/11	23.8	58.3	14	L	46.3	0.9 J	ND	ND		MRMW9S-W-30047
MW9S	38.83-53.83	4/20/11	23.8	58.3	14	L	46.3	1.1	ND	ND	Replicate.	MRMW9SDUP-W-30054
MW9S	38.83-53.83	10/4/11	22.4	58.5	8.0	L	46.3	0.9 J	ND	ND		MRMW9S-W-30076
MW9S	38.83-53.83	3/28/12	23.2	58.5	6.3	L	46.3	1.3	ND	ND		MRMW9S-W-30111
MW10S	30-45	3/21/06	12.3	49.6	19	gal	—	ND	ND	ND		MRMW10S-W-19999
MW10S	30-45	9/18/06	11.1	49.6	20	gal	—	ND	ND	ND		MRMW10S-W-22489
MW10S	30-45	3/21/07	10.8	49.6	20	gal	—	ND	ND	ND		MRMW10S-W-16485
MW10S	30-45	10/1/07	7.0	49.7	20	gal	—	ND	ND	ND		MRMW10S-W-16593
MW10S	30-45	4/14/08	9.8	49.7	1.9	L	—	ND	ND	ND		MRMW10S-W-23240
MW10S	30-45	10/20/08	13.7	49.7	5.4	L	37.5	ND	ND	ND		MRMW10S-W-27630
MW10S	30-45	4/23/09	13.6	45.0	7.5	L	37.5	ND	ND	ND		MRMW10S-W-27662
MW10S	30-45	9/3/09	12.0	49.7	7.5	L	37.5	ND	ND	ND		MRMW10S-W-29952
MW10S	30-45	4/6/10	7.5	49.7	9.0	L	37.5	ND	ND	ND		MRMW10S-W-29992
MW10S	30-45	9/22/10	11.7	49.7	11	L	37.5	ND	0.3 J	ND		MRMW10S-W-30020
MW10S	30-45	4/20/11	13.7	49.3	7.3	L	37.5	ND	0.2 J	ND		MRMW10S-W-30048
MW10S	30-45	10/4/11	12.5	49.7	8.0	L	37.5	ND	ND	ND		MRMW10S-W-30077
MW10S	30-45	3/28/12	12.8	49.7	8.0	L	37.5	ND	0.3 J	ND		MRMW10S-W-30112
MW10S	30-45	3/28/12	12.8	49.7	8.0	L	37.5	ND	0.3 J	ND	Replicate.	MRMW10SDUP-W-30119
MW11S	53-68	3/22/06	35.2	72.5	20	gal	—	39	0.9 J	ND		MRMW11S-W-20001
MW11S	53-68	9/19/06	36.0	73.1	20	gal	—	53	1.0	ND		MRMW11S-W-22491
MW11S	53-68	3/20/07	34.7	73.1	20	gal	—	37	0.8 J	ND		MRMW11S-W-16479
MW11S	53-68	10/1/07	31.6	73.0	20	gal	—	54	1.2	ND		MRMW11S-W-16594
MW11S	53-68	4/15/08	29.9	72.7	5.5	L	—	35	0.8 J	ND	April monitoring.	MRMW11S-W-23241
MW11S	53-68	4/22/08	30.2	72.7	7.2	L	—	42	0.9 J	ND	Confirm low carbon tetrachloride.	MRMW11S-W-23261
MW11S	53-68	10/20/08	37.1	72.7	9.0	L	60.5	42	0.9 J	ND	Low flow.	MRMW11S-W-27631
MW11S	53-68	10/21/08	—	—	—	—	—	45	0.9 J	ND	Full purge.	MRMW11S-W-27651
MW11S	53-68	4/23/09	38.1	72.7	5.0	L	60.5	46	1.0	ND		MRMW11S-W-27663
MW11S	53-68	9/3/09	34.7	72.7	7.5	L	60.5	39	0.9 J	ND	Low flow.	MRMW11S-W-29953
MW11S	53-68	9/4/09	35.0	72.7	72	L	67.0	41	0.9 J	ND	Three well volumes.	MRMW11S-W-29973
MW11S	53-68	4/6/10	29.5	72.7	6.5	L	60.5	38	1.0	ND		MRMW11S-W-29993
MW11S	53-68	9/23/10	34.8	72.7	7.0	L	60.5	28	1.0	ND		MRMW11S-W-30021
MW11S	53-68	4/20/11	39.2	72.5	7.5	L	60.5	38	1.1	ND		MRMW11S-W-30049
MW11S	53-68	10/4/11	36.8	72.7	6.0	L	60.5	33	0.8 J	ND		MRMW11S-W-30078
MW11S	53-68	3/28/12	36.5	72.7	6.0	L	60.5	39	1.1	ND		MRMW11S-W-30113
Isch	—	2/19/04	—	—	Pump ^e	—	—	ND	ND	ND		MRJR-W-16502
Isch	—	9/14/05	—	—	Pump	—	—	ND	ND	ND		MRPRISCH-W-16513

TABLE 3.3 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Concentration (µg/L)			Comment	Sample
								Carbon Tetrachloride	Chloroform	Methylene Chloride		
Isch	—	3/23/06	—	—	20	gal	—	ND	ND	ND		MRISCH-W-19989
Isch	—	9/19/06	—	—	Pump	—	—	ND	ND	ND		MRISCH-W-16531
Isch	—	3/22/07	—	—	Pump	—	—	ND	ND	ND		MRISCH-W-16564
Isch	—	10/3/07	—	—	Pump	—	—	ND	ND	ND		MRISCH-W-16590
Isch	—	4/15/08	—	—	Pump	—	—	0.4 J	ND	ND		MRISCH-W-23242
Isch	—	4/22/08	—	—	Pump	—	—	ND	ND	ND		MRISCH-W-23262
Isch	—	10/21/08	—	—	Pump	—	—	ND	ND	ND		MRISCH-W-27632
Isch	—	4/22/09	—	—	Pump	—	—	ND	ND	ND		MRISCH-W-27664
Isch	—	9/2/09	—	—	Pump	—	—	ND	ND	ND		MRISCH-W-29954
Isch	—	4/7/10	—	—	Pump	—	—	ND	ND	ND		MRISCH-W-29994
Isch	—	9/22/10	—	—	Pump	—	—	ND	ND	ND		MRISCH-W-30022
Isch	—	4/21/11	—	—	Pump	—	—	ND	ND	ND		MRISCH-W-30050
Isch	—	10/3/11	—	—	Pump	—	—	ND	ND	ND		MRISCH-W-30079
Isch	—	3/28/12	—	—				ND	ND	ND		MRISCH-W-30114
Rilinger	—	6/4/04	—	—	Pump	—	—	ND	ND	ND		MRPRIVRIL-W-16471
Rilinger	—	9/14/05	—	—	Pump	—	—	2.6	0.1 J	ND		MRPRILL-W-16512
Rilinger	—	3/19/06	—	—	Pump	—	—	ND	ND	0.4 J B		MRRILINGER-W-19988
Rilinger	—	9/19/06	—	—	Pump	—	—	ND	ND	ND		MRRILI-W-16530
Rilinger	—	3/29/07	—	—	Pump	—	—	1.3	1.1	ND		MRRILINGER-W-16561
Rilinger	—	10/3/07	—	—	Pump	—	—	13 ^f	0.4 J	ND		MRRILINGER-W-16591
Rilinger	—	10/8/07	—	—	Pump	—	—	0.4 J	ND	ND		MRRILINGER-W-16592
Rilinger	—	1/11/08	—	—	Pump	—	—	6.2	0.5 J	ND		MORIL-W-11108
Rilinger	—	4/15/08	—	—	Pump	—	—	9.9	0.4 J	ND		MRRILINGER-W-23243
Rilinger	—	10/21/08	—	—	Pump	—	—	0.9 J	ND	ND		MRRILLINGER-W-27633
Rilinger	—	4/22/09	—	—	Pump	—	—	1.2	ND	ND		MRRILLINGER-W-27665
Rilinger	—	9/2/09	—	—	Pump	—	—	1.0	ND	ND		MRRILLINGER-W-29955
Rilinger	—	4/7/10	—	—	Pump	—	—	0.8 J	ND	ND		MRRILLINGER-W-29995
Rilinger	—	9/22/10	—	—	Pump	—	—	1.3	ND	ND		MRRILLINGER-W-30023
Rilinger	—	4/21/11	—	—	Pump	—	—	0.7 J	ND	ND		MRRILLINGER-W-30051
Rilinger	—	10/3/11	—	—	Pump	—	—	0.7 J	ND	ND		MRRillinger-W-30080
Rilinger	—	3/28/12	—	—				0.7 J	ND	ND		MRRILLINGER-W-30115
Stone	43 ^g	6/4/04	23.4	—	—	—	—	10	ND	ND	Purged dry.	MRPRIVSTON-W-16475
Stone	43	9/14/05	17.2	40.0	—	—	—	2.6	0.3 J	ND		MRPRSTON-W-16511
Stone	43	3/19/06	17.4	40.0	100	gal	—	14	0.8 J	0.4 J B		MRSTONE-W-19987
Stone	43	9/19/06	18.6	38.8	41	gal	—	2.1	ND	ND		MRSTONE-W-16529
Stone	43	3/22/07	20.6	38.8	56	gal	—	5.4	0.3 J	ND		MRSTONE-W-16560
Stone	43	10/3/07	14.6	38.6	72	gal	—	2.8	ND	ND		MRSTONE-W-16589
Stone	43	4/15/08	—	38.9	—	—	—	0.9 J	ND	ND		MRSTONE-W-23244
Stone	43	10/21/08	—	—	5.0	gal	—	3.0	ND	ND		MRSTONE-W-27634
Stone	43	4/23/09	—	—	5.0	gal	—	1.1	ND	ND		MRSTONE-W-27666
Stone	43	9/2/09	—	—	5.0	gal	—	0.9 J	ND	ND		MRSTONE-W-29956
Stone	43	4/7/10	—	—	5.0	gal	—	0.5 J	ND	ND		MRSTONE-W-29996
Stone	43	9/22/10	—	—	5.0	gal	—	0.6 J	1.8	ND		MRSTONE-W-30024
Stone	43	4/21/11	—	—	5.0	gal	—	1.8	0.9 J	ND		MRSTONE-W-30052
Stone	43	10/3/11	—	—	5.0	gal	—	1.5	ND	ND		MRStone-W-30081
Stone	43	3/28/12	—	—				0.5 J	ND	ND		MRSTONE-W-30116

TABLE 3.3 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Concentration (µg/L)			Comment	Sample
								Carbon Tetrachloride	Chloroform	Methylene Chloride		
TD12	27-67	4/22/08	–	–	–	–	–	ND	ND	ND	Grimm irrigation well.	MRTD12-W-23264
TD12	27-67	10/20/08	–	–	–	–	–	ND	ND	ND	Grimm irrigation well.	MRTD12-W-27635
TD12	27-67	4/23/09	–	–	–	–	–	ND	ND	ND	Tile drain into creek.	MRTD12-W-27667
TD12	27-67	9/3/09	–	–	–	–	–	ND	ND	ND	Overflow before catchment.	MRTD12-W-29957
TD12	27-67	4/6/10	–	–	–	–	–	ND	ND	ND	Overflow before catchment.	MRTD12-W-29997
TD12	27-67	9/22/10	–	–	–	–	–	ND	ND	ND	Overflow before catchment.	MRTD12-W-30025
TD12	27-67	4/20/11	–	–	–	–	–	ND	ND	ND	Overflow before catchment.	MRTD12-W-30053
TD12	27-67	10/3/11	–	–	–	–	–	ND	ND	ND	Overflow before catchment.	MRTD12-W-30082
TD12	27-67	3/28/12						ND	ND	ND	Overflow before catchment.	MRTD12-W-30117

^a ND, not detected at instrument detection limit of 0.1 µg/L.

^b Qualifier J indicates an estimated concentration below the method quantitation limit of 1.0 µg/L.

^c Qualifier B indicates that the compound was present in the associated method blank.

^d Qualifier R indicates that the contaminant was present in the associated equipment rinsate. Resampling confirmed that the well was free of contamination.

^e The well's dedicated pump was used for sampling. The pump was allowed to run before the sample was collected.

^f Sample collected after recent reactivation of well. Well resampled on 1/8/07 and 1/11/08.

^g Total depth.

TABLE 3.4 Field measurements for groundwater samples collected in 2003-2012. Shading indicates sample collection with the low-flow procedure.

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Iron II (mg/L)	Carbon Dioxide (mg/L)	Sample
MW1S	11-51	10/23/03	30.4	54.0	70	gal	–	14.6	7.14	933	— ^a	13	–	–	MRMW1S-W-16422
MW1S	11-51	6/2/04	27.0	53.9	53	gal	–	14.4	7.16	970	–	–	–	–	MRMW1S-W-16461
MW1S	11-51	9/13/05	24.2	53.9	57	gal	–	15.3	6.95	1174	7.17	200	0.00	55	MRMW1S-W-19259
MW1S	11-51	3/22/06	29.0	54.0	48	gal	–	15.5	7.23	927	9.94	220	0.01	40	MRMW1S-W-20008
MW1S	11-51	9/20/06	26.8	54.0	55	gal	–	15.7	7.12	973	7.52	–	0.03	40	MRMW1S-W-22495
MW1S	11-51	3/21/07	25.8	54.0	55	gal	–	16.6	6.48	960	5.45	88	0.00	40	MRMW1S-W-16488
MW1S	11-51	10/1/07	21.7	54.0	63	gal	–	16.0	6.80	886	6.79	128	0.00	30	MRMW1S-W-16595
MW1S	11-51	4/14/08	16.2	54.0	5.5	L	–	13.9	7.09	1237	6.38	118	0.02	–	MRMW1S-W-23230
MW1S	11-51	4/22/08	16.0	54.0	6.3	L	–	15.6	6.96	1230	6.10	133	–	–	MRMW1S-W-23259
MW1S	11-51	5/1/08	–	–	3.2	L	22.0	17.1	7.11	801	3.34	104	–	–	MRMW1S-22-W-23275
MW1S	11-51	5/1/08	–	–	3.2	L	27.0	17.0	7.10	820	3.40	102	–	–	MRMW1S-27-W-23276
MW1S	11-51	5/1/08	–	–	4.3	L	48.0	16.3	7.00	1301	3.03	118	–	–	MRMW1S-48-W-23277
MW1S	11-51	10/20/08	25.8	54.0	6.0	L	31.0	14.0	6.84	1265	5.40	103	0.00	–	MRMW1S-W-27620
MW1S	11-51	10/21/08	–	–	TWV ^b	–	–	14.8	7.02	978	–	–	0.00	–	MRMW1S-W-27649
MW1S	11-51	4/24/09	24.4	54.0	5.0	L	39.2	16.2	7.00	986	8.93	75	0.04	–	MRMW1S-W-27652
MW1S	11-51	9/3/09	19.0	54.0	8.0	L	35.0	16.0	6.94	1334	7.08	28	0.04	–	MRMW1S-W-29942
MW1S	11-51	9/4/09	19.3	51.2	244	L	50.0	15.0	6.92	950	7.73	61	–	–	MRMW1S-W-29971
MW1S	11-51	4/7/10	11.7	51.3	7.0	L	16.6	9.6	7.01	695	8.66	233	0.00	–	MRMW1ST-W-29981
MW1S	11-51	4/7/10	11.6	51.3	6.0	L	31.5	11.9	6.96	918	8.42	246	0.00	–	MRMW1SM-W-29980
MW1S	11-51	4/7/10	11.7	51.3	6.0	L	46.3	11.7	6.95	965	8.29	251	0.01	–	MRMW1SB-W-29979
MW1S	11-51	4/7/10	11.5	51.3	80	gal	49.0	14.0	7.18	687	8.86	211	0.03	–	MRMW1S3X-W-29982
MW1S	11-51	9/22/10	19.9	54.0	10	L	31.0	17.9	7.01	1337	6.17	134	0.07	–	MRMW1S-W-30010
MW1S	11-51	4/20/11	23.5	54.0	6.5	L	37.0	13.8	6.96	866	6.39	55	0.00	–	MRMW1S-W-30038
MW1S	11-51	10/4/11	21.8	54.0	8.0	L	34.9	15.4	7.65	1166	5.72	98	0.00	–	MRMW1S-W-30067
MW1S	11-51	10/12/11	22.1	54.0	6.0	L	36.6	16.3	7.24	1279	5.76	323	–	–	MRMW1S-W-30091
MW1S	11-51	10/12/11	22.4	54.0	65	gal	49.0	16.7	7.36	905	6.18	270	–	–	MRMW1S3X-W-30092
MW1S	11-51	3/29/12	20.1	54.0	8.0	L	25.0	16.0	7.00	862	6.66	-3	0.00	–	MRMW1SU-W-30099
MW1S	11-51	3/29/12	20.2	54.0	8.0	L	35.0	15.6	7.00	955	6.55	-5	0.03	–	MRMW1SM-W-30100
MW1S	11-51	3/29/12	20.2	54.0	8.0	L	46.0	15.6	7.02	953	6.55	-2	0.00	–	MRMW1SL-W-30101
MW1S	11-51	3/29/12	20.2	54.0	68	gal	50.0	16.6	7.14	837	6.61	12	0.01	–	MRMW1S3X-W-30102
MW1D	63-88	10/22/03	28.4	88.5	92	gal	–	14.9	6.87	2620	–	25	–	–	MRMW1D-W-16421
MW1D	63-88	6/2/04	26.8	88.6	140	gal	–	13.9	6.87	2460	–	–	–	–	MRMW1D-W-16458
MW1D	63-88	9/13/05	23.7	88.6	200	gal	–	15.5	6.56	2470	–	–	–	–	MRMW1D-W-16518
MW1D	63-88	3/19/06	26.9	88.6	112	gal	–	12.9	6.95	2460	5.11	230	0.00	–	MRMW1D-W-19986
MW1D	63-88	9/20/06	25.5	88.8	125	gal	–	12.5	6.93	2690	–	–	–	–	MRMW1D-W-16532
MW1D	63-88	3/21/07	25.8	88.8	125	gal	–	15.3	6.39	2540	0.08	12	0.39	40	MRMW1D-W-16487
MW1D	63-88	10/1/07	22.8	89.4	130	gal	–	16.3	6.60	2230	6.79	5	0.44	45	MRMW1D-W-16596
MW1D	63-88	4/14/08	29.5	89.0	6.0	L	–	14.6	6.99	2637	0.50	32	0.73	–	MRMW1D-W-23231
MW1D	63-88	10/20/08	30.4	89.0	7.0	L	75.5	13.4	6.83	2556	0.24	21	0.37	–	MRMW1D-W-27621
MW1D	63-88	4/24/09	31.0	89.0	7.0	L	75.5	16.7	6.92	2419	0.37	22	0.28	–	MRMW1D-W-27653
MW1D	63-88	9/3/09	27.1	89.0	6.5	L	75.5	16.9	7.00	2200	0.59	16	0.27	–	MRMW1D-W-29943
MW1D	63-88	4/6/10	24.7	89.0	8.5	L	75.5	17.8	6.39	2274	0.15	33	0.01	–	MRMW1D-W-29983
MW1D	63-88	9/22/10	27.9	89.0	9.0	L	75.5	17.6	7.01	2492	0.31	61	0.04	–	MRMW1D-W-30011
MW1D	63-88	4/20/11	30.2	89.0	5.5	L	75.5	13.5	6.98	1951	0.33	-2	0.20	–	MRMW1D-W-30039
MW1D	63-88	10/4/11	29.1	89.0	6.5	L	75.5	14.9	7.66	2011	0.17	22	0.09	–	MRMW1D-W-30068
MW1D	63-88	3/28/12	30.5	89.0	5.8	L	75.5	16.0	7.01	2161	0.30	155	0.00	–	MRMW1D-W-30103

TABLE 3.4 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Iron II (mg/L)	Carbon Dioxide (mg/L)	Sample
MW2S	13-53	10/22/03	42.2	53.4	PDS ^c	–	–	16.2	6.86	875	–	20	–	–	MRMW02-W-16419
MW2S	13-53	6/2/04	37.4	53.3	31	gal	–	16.9	7.07	861	–	–	–	–	MRMW2S-W-16459
MW2S	13-53	9/14/05	33.7	53.3	38	gal	–	15.2	6.94	801	7.85	142	–	65	MRMW2S-W-19264
MW2S	13-53	3/21/06	40.9	53.3	27	gal	–	13.0	7.07	863	9.40	262	0.14	25	MRMW2S-W-19992
MW2S	13-53	9/18/06	36.5	53.3	28	gal	–	13.6	6.99	844	6.81	69	0.00	80	MRMW2S-W-22488
MW2S	13-53	3/22/07	35.8	53.3	35	gal	–	15.2	6.40	790	5.82	69	0.00	30	MRMW2S-W-16559
MW2S	13-53	10/3/07	31.2	53.4	44	gal	–	16.8	6.97	703	6.70	269	0.01	30	MRMW2S-W-16587
MW2S	13-53	4/15/08	23.6	53.4	2.2	L	–	11.7	7.23	742	3.22	75	0.00	–	MRMW2S-W-23232
MW2S	13-53	10/21/08	33.7	53.5	5.0	L	33.0	13.4	7.08	745	8.55	104	0.00	–	MRMW2S-W-27622
MW2S	13-53	10/21/08	–	–	TWV	–	–	–	–	–	–	–	–	–	MRMW2S-W-27652
MW2S	13-53	4/23/09	33.2	53.5	6.5	L	43.4	15.2	6.97	755	9.19	26	0.00	–	MRMW2S-W-27654
MW2S	13-53	9/3/09	29.4	53.5	5.4	L	41.2	15.1	7.15	690	8.80	32	0.01	–	MRMW2S-W-29944
MW2S	13-53	4/6/10	18.6	52.4	6.5	L	36.0	17.1	6.95	681	6.85	37	0.12	–	MRMW2S-W-29984
MW2S	13-53	9/22/10	31.3	53.0	7.0	L	33.0	16.1	7.03	723	7.16	142	0.00	–	MRMW2S-W-30012
MW2S	13-53	4/20/11	36.0	53.5	8.0	L	44.5	13.4	6.91	615	7.07	103	0.05	–	MRMW2S-W-30040
MW2S	13-53	10/4/11	32.7	53.5	7.5	L	42.6	15.3	7.71	592	6.89	120	0.01	–	MRMW2S-W-30069
MW2S	13-53	3/28/12	31.5	53.5	7.0	L	42.5	15.8	7.06	629	7.04	-59	0.00	–	MRMW2S-W-30104
MW3S	18-48	10/23/03	36.5	47.8	73	gal	–	16.8	7.23	655	–	6	–	–	MRMW03-W-16423
MW3S	18-48	6/2/04	30.7	47.5	34	gal	–	14.2	7.23	664	–	–	–	–	MRMW3S-W-16462
MW3S	18-48	9/13/05	25.6	47.6	50	gal	–	14.6	7.13	663	8.82	223	0.00	100	MRMW3S-W-19261
MW3S	18-48	3/23/06	35.6	47.7	28	gal	–	8.9	7.16	662	6.74	269	0.08	25	MRMW3S-W-19994
MW3S	18-48	9/20/06	29.4	47.8	22	gal	–	12.9	7.15	669	7.64	105	0.00	–	MRMW3S-W-22496
MW3S	18-48	3/22/07	26.2	47.8	45	gal	–	15.0	6.44	578	5.90	261	0.17	30	MRMW3S-W-16563
MW3S	18-48	10/3/07	22.7	47.9	50	gal	–	15.3	6.97	594	0.38	282	0.00	20	MRMW3S-W-16585
MW3S	18-48	4/14/08	17.0	47.8	3.3	L	–	13.7	7.17	693	3.52	165	0.00	–	MRMW3S-W-23233
MW3S	18-48	4/22/08	15.8	47.8	6.5	L	–	16.0	6.99	685	6.71	155	–	–	MRMW3S-W-23260
MW3S	18-48	5/1/08	–	–	2.6	L	26.0	13.2	7.17	675	3.83	161	–	–	MRMW3S-26-W-23269
MW3S	18-48	5/1/08	–	–	2.8	L	38.0	12.7	7.12	671	4.21	193	–	–	MRMW3S-38-W-23270
MW3S	18-48	5/1/08	–	–	3.2	L	45.0	12.6	7.03	675	4.57	205	–	–	MRMW3S-45-W-23271
MW3S	18-48	10/21/08	27.0	47.8	4.2	L	33.0	12.6	7.17	673	6.42	115	0.00	–	MRMW3S-W-27623
MW3S	18-48	10/21/08	–	–	TWV	–	–	14.3	7.11	522	–	–	0.00	–	MRMW3S-W-27650
MW3S	18-48	4/23/09	26.7	47.8	5.0	L	37.3	17.0	7.06	662	9.40	-63	0.01	–	MRMW3S-W-27655
MW3S	18-48	9/3/09	22.4	47.8	5.5	L	35.2	16.3	7.28	640	7.69	12	0.01	–	MRMW3S-W-29945
MW3S	18-48	9/4/09	22.6	47.8	190	L	46.0	14.2	6.57	659	9.09	95	–	–	MRMW3S-W-29972
MW3S	18-48	4/6/10	12.1	47.8	6.0	L	33.0	16.0	6.99	611	8.20	8	0.00	–	MRMW3S-W-29985
MW3S	18-48	9/23/10	23.7	47.8	7.0	L	33.0	15.8	7.22	674	11.00	150	0.05	–	MRMW3S-W-30013
MW3S	18-48	4/20/11	32.1	47.8	6.2	L	40.0	13.3	7.11	514	6.64	61	0.02	–	MRMW3S-W-30041
MW3S	18-48	10/4/11	26.0	47.8	7.0	L	37.0	15.8	7.78	563	5.99	115	0.00	–	MRMW3S-W-30070
MW3S	18-48	3/28/12	24.0	47.8	6.5	L	35.9	15.2	7.11	592	7.33	-56	0.00	–	MRMW3S-W-30105
MW4S	17-47	10/21/03	46.4	47.8	PDS	–	–	–	7.17	758	–	–	–	–	MRMW04-W-16418
MW4S	17-47	6/4/04	43.2	47.8	10	gal	–	15.4	6.93	769	–	–	–	–	MRMW4S-W-16470
MW4S	17-47	9/14/05	36.2	47.8	8.0	gal	–	15.4	7.30	751	8.00	174	0.00	50	MRMW4S-W-19262
MW4S	17-47	3/21/06	44.6	47.7	6.0	gal	–	6.7	7.25	729	10.90	154	0.00	25	MRMW4S-W-19993
MW4S	17-47	9/18/06	41.6	47.8	5.3	gal	–	13.1	7.25	728	8.05	41	0.00	50	MRMW4S-W-22487
MW4S	17-47	3/22/07	38.7	47.8	6.0	gal	–	14.2	6.53	765	5.91	78	0.10	25	MRMW4S-W-16562
MW4S	17-47	10/3/07	31.1	47.7	30	gal	–	16.4	6.95	715	7.40	281	0.10	30	MRMW4S-W-16586

TABLE 3.4 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Iron II (mg/L)	Carbon Dioxide (mg/L)	Sample
MW4S	17-47	1/11/08	—	—	—	—	—	11.3	7.56	757	—	—	—	—	MOMW4S-W-011108
MW4S	17-47	4/14/08	26.3	47.9	2.5	L	—	13.1	7.28	783	3.80	213	0.00	—	MRMW4S-W-23234
MW4S	17-47	10/20/08	36.7	47.8	8.0	gal	—	14.5	7.16	756	8.71	104	0.00	—	MRMW4S-W-27624
MW4S	17-47	4/23/09	41.5	47.8	5.0	L	44.7	15.8	7.16	717	9.45	22	0.05	—	MRMW4S-W-27656
MW4S	17-47	9/4/09	31.6	47.8	6.0	L	39.3	15.0	7.13	731	8.23	80	0.04	—	MRMW4S-W-29946
MW4S	17-47	4/6/10	21.8	47.9	5.5	L	34.8	16.5	7.07	629	8.07	-1	0.00	—	MRMW4S-W-29986
MW4S	17-47	9/22/10	33.2	47.8	6.0	L	32.0	16.3	7.07	732	7.28	90	0.00	—	MRMW4S-W-30014
MW4S	17-47	4/21/11	42.4	47.8	5.0	L	44.7	12.6	7.15	595	7.25	138	0.00	—	MRMW4S-W-30042
MW4S	17-47	10/4/11	35.6	47.8	6.0	L	40.9	16.0	7.95	606	7.62	115	0.00	—	MRMW4S-W-30071
MW4S	17-47	3/28/12	35.1	47.8	7.2	L	41.5	14.5	6.97	612	7.78	-37	0.01	—	MRMW4S-W-30106
MW5S	15-55	10/22/03	31.4	55.7	48	gal	—	15.3	7.10	816	—	6	—	—	MRMW05-W-16420
MW5S	15-55	6/2/04	26.3	55.7	>57	gal	—	14.3	7.21	817	—	—	—	—	MRMW5S-W-16460
MW5S	15-55	9/13/05	22.7	54.2	75	gal	—	16.0	7.04	763	13.90	228	0.00	60	MRMW5S-W-19260
MW5S	15-55	3/22/06	28.6	54.5	50	gal	—	13.9	7.25	781	4.52	234	0.06	35	MRMW5S-W-19996
MW5S	15-55	9/20/06	25.4	54.6	52	gal	—	13.9	7.19	787	5.82	73	0.00	35	MRMW5S-W-22493
MW5S	15-55	3/22/07	25.1	54.6	58	gal	—	15.5	6.50	436	3.98	159	0.08	30	MRMW5S-W-16569
MW5S	15-55	10/3/07	19.6	54.7	68	gal	—	16.5	7.18	850	1.87	268	0.04	25	MRMW5S-W-16588
MW5S	15-55	4/14/08	11.2	54.6	6.0	L	—	14.1	6.90	1008	3.73	143	0.02	—	MRMW5S-W-23235
MW5S	15-55	4/23/08	11.3	54.6	6.5	L	—	14.9	6.88	1009	3.27	184	—	—	MRMW5S-W-23266
MW5S	15-55	5/1/08	—	—	3.7	L	20.0	15.2	6.92	1014	2.99	126	—	—	MRMW5S-20-W-23272
MW5S	15-55	5/1/08	—	—	3.4	L	28.0	15.1	6.90	997	2.38	124	—	—	MRMW5S-28-W-23273
MW5S	15-55	5/1/08	—	—	4.0	L	52.0	15.1	6.89	989	2.06	128	—	—	MRMW5S-52-W-23274
MW5S	15-55	10/21/08	22.5	54.6	7.0	L	35.0	13.2	7.04	818	5.54	180	0.00	—	MRMW5S-W-27625
MW5S	15-55	4/24/09	22.1	54.6	5.5	L	38.4	15.2	6.98	817	6.68	77	0.00	—	MRMW5S-W-27657
MW5S	15-55	9/3/09	17.6	54.6	5.5	L	36.3	16.5	7.10	873	3.07	23	0.02	—	MRMW5S-W-29947
MW5S	15-55	4/7/10	8.3	54.5	5.5	L	35.0	12.6	6.76	844	4.46	149	0.00	—	MRMW5S-W-29987
MW5S	15-55	9/22/10	19.3	55.0	6.5	L	35.0	16.4	6.81	891	1.69	112	0.00	—	MRMW5S-W-30015
MW5S	15-55	4/20/11	24.4	54.6	7.0	L	36.0	14.6	7.17	617	5.34	89	0.00	—	MRMW5S-W-30043
MW5S	15-55	10/4/11	21.1	54.6	6.5	L	38.3	16.7	7.72	740	4.37	118	0.03	—	MRMW5S-W-30072
MW5S	15-55	3/28/12	20.6	54.6	7.0	L	37.6	16.9	7.11	724	5.29	-66	0.00	—	MRMW5S-W-30107
MW6S	10-25	6/3/04	3.3	26.9	45	gal	—	15.1	6.89	2410	—	—	—	—	MRMW6S-W-16465
MW6S	10-25	9/14/05	4.7	26.9	43	gal	—	14.1	7.06	2350	0.01	54	0.00	60	MRMW6S-W-19263
MW6S	10-25	3/20/06	5.4	26.9	43	gal	—	9.8	6.91	2360	1.37	89	0.38	60	MRMW6S-W-19990
MW6S	10-25	9/18/06	5.5	26.9	27	gal	—	12.5	6.96	2410	0.08	-29	0.35	85	MRMW6S-W-22486
MW6S	10-25	3/21/07	5.4	26.9	30	gal	—	18.0	6.34	2450	0.12	75	0.78	40	MRMW6S-W-16486
MW6S	10-25	10/2/07	5.0	26.9	31	gal	—	17.1	7.33	2280	0.20	61	0.19	35	MRMW6S-W-16583
MW6S	10-25	4/15/08	5.2	26.9	2.5	L	—	8.7	6.99	2485	0.31	-76	0.41	—	MRMW6S-W-23236
MW6S	10-25	10/20/08	5.7	26.9	5.0	L	17.5	14.3	6.84	2380	0.36	18	0.28	—	MRMW6S-W-27626
MW6S	10-25	4/24/09	6.2	26.9	12	L	17.5	15.2	6.93	2270	0.19	-39	0.63	—	MRMW6S-W-27658
MW6S	10-25	9/4/09	5.9	26.9	5.4	L	17.5	13.8	6.88	2302	0.64	79	0.32	—	MRMW6S-W-29948
MW6S	10-25	4/6/10	6.2	26.9	8.0	L	17.5	15.2	6.87	2141	0.05	-19	0.21	—	MRMW6S-W-29988
MW6S	10-25	9/22/10	5.5	26.9	8.8	L	17.5	15.6	6.92	2354	0.42	47	0.24	—	MRMW6S-W-30016
MW6S	10-25	4/20/11	6.5	24.9	8.0	L	17.5	13.0	6.73	1867	0.18	28	0.09	—	MRMW6S-W-30044
MW6S	10-25	10/4/11	6.5	26.9	6.0	L	17.5	16.6	7.11	2020	0.14	14	0.34	—	MRMW6S-W-30073
MW6S	10-25	3/28/12	6.4	26.9	7.0	L	17.5	14.7	6.62	1928	0.20	0	0.00	—	MRMW6S-W-30108

TABLE 3.4 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Iron II (mg/L)	Carbon Dioxide (mg/L)	Sample
MW7S	20-45	6/3/04	26.7	47.0	40	gal	–	13.8	7.19	763	–	–	–	–	MRMW7S-W-16466
MW7S	20-45	9/12/05	17.6	46.9	55	gal	–	15.0	7.26	760	8.35	240	0.00	50	MRMW7S-W-19258
MW7S	20-45	3/22/06	22.5	47.0	48	gal	–	15.2	7.32	740	5.52	268	0.03	25	MRMW7S-W-20000
MW7S	20-45	9/19/06	20.9	47.0	56	gal	–	13.2	7.15	764	7.37	114	0.00	25	MRMW7S-W-22490
MW7S	20-45	3/20/07	18.0	47.0	50	gal	–	14.6	6.43	750	5.31	95	0.00	30	MRMW7S-W-16481
MW7S	20-45	10/1/07	12.4	47.0	70	gal	–	15.6	6.99	725	7.76	269	0.01	35	MRMW7S-W-16581
MW7S	20-45	4/14/08	7.7	47.0	1.8	L	–	13.4	7.21	811	2.50	276	0.00	–	MRMW7S-W-23237
MW7S	20-45	4/23/08	7.8	47.0	11	L	–	14.0	7.00	822	7.41	191	–	–	MRMW7S-W-23265
MW7S	20-45	10/20/08	17.2	47.0	6.3	L	32.5	14.9	7.02	802	6.38	87	0.00	–	MRMW7S-W-27627
MW7S	20-45	4/23/09	16.7	47.0	7.0	L	32.5	16.1	7.01	727	9.48	-53	0.01	–	MRMW7S-W-27659
MW7S	20-45	9/3/09	13.8	47.0	9.0	L	32.5	17.4	7.58	814	9.86	102	0.02	–	MRMW7S-W-29949
MW7S	20-45	4/6/10	6.4	47.0	5.4	L	32.5	14.7	7.04	718	7.92	23	0.00	–	MRMW7S-W-29989
MW7S	20-45	9/23/10	14.2	45.0	6.0	L	32.5	16.0	6.91	772	8.39	201	0.00	–	MRMW7S-W-30017
MW7S	20-45	4/20/11	19.7	46.7	6.0	L	32.5	13.0	7.00	598	7.91	128	0.00	–	MRMW7S-W-30045
MW7S	20-45	10/4/11	7.1	47.0	7.0	L	32.5	16.2	7.18	674	8.17	205	0.01	–	MRMW7S-W-30074
MW7S	20-45	3/28/12	15.4	47.0	8.0	L	32.5	16.6	6.69	686	8.01	165	0.04	–	MRMW7S-W-30109
MW8S	10-25	6/3/04	3.7	26.8	45	gal	–	12.8	7.12	941	–	–	–	–	MRMW8S-W-16464
MW8S	10-25	9/14/05	4.0	26.8	57	gal	–	14.1	7.30	853	0.02	65	0.00	40	MRMW8S-W-19265
MW8S	10-25	3/20/06	4.6	26.4	43	gal	–	12.5	7.04	954	0.90	153	0.05	30	MRMW8S-W-19991
MW8S	10-25	9/19/06	4.8	26.8	45	gal	–	11.8	7.09	903	0.58	284	0.13	50	MRMW8S-W-22492
MW8S	10-25	3/20/07	2.6	26.8	49	gal	–	11.0	6.52	1026	0.77	76	0.00	30	MRMW8S-W-16483
MW8S	10-25	10/2/07	2.2	26.8	48	gal	–	15.2	6.76	607	2.66	209	0.02	25	MRMW8S-W-16584
MW8S	10-25	4/15/08	0.7	26.8	5.5	L	–	10.2	7.27	1067	1.58	170	0.00	–	MRMW8S-W-23238
MW8S	10-25	10/20/08	3.6	26.8	8.0	L	17.5	14.0	6.91	1002	0.93	69	0.00	–	MRMW8S-W-27628
MW8S	10-25	4/23/09	2.3	26.8	6.0	L	17.5	11.4	6.88	825	1.76	-35	0.02	–	MRMW8S-W-27660
MW8S	10-25	9/3/09	2.9	26.8	8.5	L	17.5	14.1	7.52	890	2.09	115	0.00	–	MRMW8S-W-29950
MW8S	10-25	4/6/10	1.1	26.8	8.0	L	17.5	13.7	7.00	843	2.60	212	0.00	–	MRMW8S-W-29990
MW8S	10-25	9/22/10	2.5	26.8	9.0	L	17.5	16.2	7.12	865	1.51	100	0.04	–	MRMW8S-W-30018
MW8S	10-25	4/20/11	2.7	26.8	9.0	L	17.5	10.05	6.88	652	0.30	98	0.00	–	MRMW8S-W-30046
MW8S	10-25	10/4/11	4.9	26.3	9.0	L	17.5	14.37	7.16	711	1.22	191	0.04	–	MRMW8S-W-30075
MW8S	10-25	3/28/12	1.4	26.8	6.3	L	17.0	13.62	6.63	708	0.51	110	0.02	–	MRMW8S-W-30110
MW9S	38.83-53.83	3/22/06	20.2	58.6	20	gal	–	14.6	7.17	715	0.41	25	0.00	35	MRMW9S-W-20004
MW9S	38.83-53.83	9/19/06	18.9	59.0	22	gal	–	13.0	7.08	707	0.10	113	0.00	55	MRMW9S-W-22494
MW9S	38.83-53.83	3/20/07	16.7	59.0	22	gal	–	14.2	6.39	714	0.21	40	0.00	20	MRMW9S-W-16480
MW9S	38.83-53.83	10/1/07	14.0	58.6	23	gal	–	15.5	7.05	664	5.50	191	0.00	30	MRMW9S-W-16582
MW9S	38.83-53.83	4/14/08	16.6	58.6	2.3	L	–	12.6	7.33	709	1.93	266	0.07	–	MRMW9S-W-23239
MW9S	38.83-53.83	10/20/08	21.5	58.5	11	L	46.3	15.1	7.15	690	6.18	106	0.00	–	MRMW9S-W-27629
MW9S	38.83-53.83	4/23/09	21.9	58.5	5.5	L	46.3	16.0	7.17	669	5.99	-65	0.07	–	MRMW9S-W-27661
MW9S	38.83-53.83	9/4/09	20.0	58.5	5.0	L	46.3	17.3	7.18	684	5.33	52	0.03	–	MRMW9S-W-29951
MW9S	38.83-53.83	4/6/10	16.5	58.5	6.0	L	46.3	15.3	7.19	650	5.50	-10	0.02	–	MRMW9S-W-29991
MW9S	38.83-53.83	9/22/10	21.2	53.8	7.0	L	46.3	17.1	7.12	704	6.07	151	0.00	–	MRMW9S-W-30019
MW9S	38.83-53.83	4/20/11	23.8	58.3	14	L	46.3	13.6	7.07	569	5.42	111	0.00	–	MRMW9S-W-30047
MW9S	38.83-53.83	10/4/11	22.4	58.5	8.0	L	46.3	16.7	7.14	618	5.90	185	0.05	–	MRMW9S-W-30076
MW9S	38.83-53.83	3/28/12	23.2	58.5	6.25	L	46.3	16.6	6.73	619	5.45	156	–	–	MRMW9S-W-30111

TABLE 3.4 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Iron II (mg/L)	Carbon Dioxide (mg/L)	Sample
MW10S	30-45	3/21/06	12.3	49.6	19	gal	—	6.3	7.11	701	2.10	88	0.01	40	MRMW10S-W-19999
MW10S	30-45	9/18/06	11.1	49.6	20	gal	—	14.3	7.17	701	0.04	24	0.08	60	MRMW10S-W-22489
MW10S	30-45	3/21/07	10.8	49.6	20	gal	—	14.5	6.51	720	0.88	11	0.00	30	MRMW10S-W-16485
MW10S	30-45	10/1/07	7.0	49.7	20	gal	—	16.3	6.97	664	0.35	248	0.04	35	MRMW10S-W-16593
MW10S	30-45	4/14/08	9.8	49.7	1.9	L	—	16.0	7.25	723	1.25	181	0.00	—	MRMW10S-W-23240
MW10S	30-45	10/20/08	13.7	49.7	5.4	L	37.5	14.3	7.03	710	1.02	56	0.00	—	MRMW10S-W-27630
MW10S	30-45	4/23/09	13.6	45.0	7.5	L	37.5	15.1	7.05	668	1.78	-57	0.07	—	MRMW10S-W-27662
MW10S	30-45	9/3/09	12.0	49.7	7.5	L	37.5	14.3	7.59	731	2.03	86	0.07	—	MRMW10S-W-29952
MW10S	30-45	4/6/10	7.5	49.7	9.0	L	37.5	16.1	7.06	649	2.91	221	0.00	—	MRMW10S-W-29992
MW10S	30-45	9/22/10	11.7	49.7	11	L	37.5	16.7	7.29	723	5.05	131	0.00	—	MRMW10S-W-30020
MW10S	30-45	4/20/11	13.7	49.3	7.25	L	37.5	12.8	7.06	573	2.09	99	0.10	—	MRMW10S-W-30048
MW10S	30-45	10/4/11	12.5	49.7	8.0	L	37.5	15.4	7.27	613	2.53	201	0.01	—	MRMW10S-W-30077
MW10S	30-45	3/28/12	12.8	49.7	8.0	L	37.5	14.7	6.73	606	2.94	139	0.06	—	MRMW10S-W-30112
MW11S	53-68	3/22/06	35.2	72.5	20	gal	—	14.8	7.33	762	9.40	237	0.06	30	MRMW11S-W-20001
MW11S	53-68	9/19/06	36.0	73.1	20	gal	—	13.0	7.24	764	1.42	158	0.02	30	MRMW11S-W-22491
MW11S	53-68	3/20/07	34.7	73.1	20	gal	—	14.6	6.33	782	3.90	76	0.00	30	MRMW11S-W-16479
MW11S	53-68	10/1/07	31.6	73.0	20	gal	—	16.4	6.49	624	6.57	241	0.04	35	MRMW11S-W-16594
MW11S	53-68	4/15/08	29.9	72.7	5.5	L	—	13.9	7.30	785	6.14	152	0.00	—	MRMW11S-W-23241
MW11S	53-68	4/22/08	30.2	72.7	7.2	L	—	15.1	7.25	790	6.22	163	—	—	MRMW11S-W-23261
MW11S	53-68	10/20/08	37.1	72.7	9.0	L	60.5	14.3	7.16	756	8.95	104	0.00	—	MRMW11S-W-27631
MW11S	53-68	10/21/08	—	—	TWV	—	—	14.8	7.19	766	—	—	0.00	—	MRMW11S-W-27651
MW11S	53-68	4/23/09	38.1	72.7	5.0	L	60.5	16.5	7.19	722	9.03	-62	0.09	—	MRMW11S-W-27663
MW11S	53-68	9/3/09	34.7	72.7	7.5	L	60.5	13.9	7.63	777	9.35	102	0.05	—	MRMW11S-W-29953
MW11S	53-68	9/4/09	35.0	72.7	72	L	67.0	16.2	6.69	721	8.78	100	—	—	MRMW11S-W-29973
MW11S	53-68	4/6/10	29.5	72.7	6.5	L	60.5	15.0	7.14	700	7.20	-20	0.00	—	MRMW11S-W-29993
MW11S	53-68	9/23/10	34.8	72.7	7.0	L	60.5	15.7	7.40	756	12.62	179	0.33	—	MRMW11S-W-30021
MW11S	53-68	4/20/11	39.2	72.5	7.5	L	60.5	13.1	7.03	603	7.20	108	0.00	—	MRMW11S-W-30049
MW11S	53-68	10/4/11	36.8	72.7	6.0	L	60.5	16.1	7.26	647	7.56	202	0.03	—	MRMW11S-W-30078
MW11S	53-68	3/28/12	36.5	72.7	6.0	L	60.5	15.6	6.73	641	7.37	158	0.00	—	MRMW11S-W-30113
Isch	—	2/19/04	—	—	Pump ^d	—	—	—	—	—	—	—	—	—	MRJR-W-16502
Isch	—	9/14/05	—	—	Pump	—	—	20.4	6.73	2300	—	—	—	—	MRPRISCH-W-16513
Isch	—	3/23/06	—	—	20	gal	—	13.0	7.23	9400	—	—	—	—	MRISCH-W-19989
Isch	—	9/19/06	—	—	Pump	—	—	—	—	—	—	—	—	—	MRISCH-W-16531
Isch	—	3/22/07	—	—	Pump	—	—	—	—	—	—	—	—	—	MRISCH-W-16564
Isch	—	10/3/07	—	—	Pump	—	—	—	—	—	—	—	—	—	MRISCH-W-16590
Isch	—	4/15/08	—	—	Pump	—	—	12.6	7.33	3160	—	—	0.28	—	MRISCH-W-23242
Isch	—	10/21/08	—	—	Pump	—	—	—	—	—	—	—	—	—	MRISCH-W-27632
Isch	—	4/22/09	—	—	Pump	—	—	15.3	6.70	2389	—	—	0.04	—	MRISCH-W-27664
Isch	—	9/2/09	—	—	Pump	—	—	13.9	7.18	2600	—	—	—	—	MRISCH-W-29954
Isch	—	4/7/10	—	—	Pump	—	—	11.8	6.86	2326	—	—	0.05	—	MRISCH-W-29994
Isch	—	4/21/11	—	—	Pump	—	—	13.3	7.03	1949	—	—	0.35	—	MRISCH-W-30050
Isch	—	10/3/11	—	—	Pump	—	—	14.5	8.10	2011	—	—	1.61	—	MRIsch-W-30079
Isch	—	3/28/12	—	—	Pump	—	—	15.5	7.12	2210	—	—	0.00	—	MRISCH-W-30114
Rilinger	—	6/4/04	—	—	Pump	—	—	15.9	6.99	2450	—	—	—	—	MRPRIVRIL-W-16471
Rilinger	—	9/14/05	—	—	Pump	—	—	—	—	—	—	—	—	—	MRPRILL-W-16512

TABLE 3.4 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Depth to Water (ft BTOC)	Depth of well (ft BTOC)	Volume Purged	Purge Units	Pump Intake Position (ft BGL)	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Iron II (mg/L)	Carbon Dioxide (mg/L)	Sample
Rilinger	—	3/19/06	—	—	Pump	—	—	11.9	7.05	2550	—	—	—	—	MRRILINGER-W-19988
Rilinger	—	9/19/06	—	—	Pump	—	—	—	—	—	—	—	—	—	MRRILI-W-16530
Rilinger	—	3/29/07	—	—	Pump	—	—	—	—	—	—	—	—	—	MRRILINGER-W-16561
Rilinger	—	10/3/07	—	—	Pump	—	—	—	—	—	—	—	—	—	MRRILINGER-W-16591
Rilinger	—	1/11/08	—	—	Pump	—	—	12.2	7.46	884	—	—	—	—	MORIL-W-11108
Rilinger	—	4/15/08	—	—	Pump	—	—	12.0	7.56	868	—	—	0.00	—	MRRILINGER-W-23243
Rilinger	—	10/21/08	—	—	Pump	—	—	—	—	—	—	—	—	—	MRRILLINGER-W-27633
Rilinger	—	4/22/09	—	—	Pump	—	—	14.5	7.14	2279	—	—	0.01	—	MRRILLINGER-W-27665
Rilinger	—	9/2/09	—	—	Pump	—	—	14.8	7.60	809	—	—	—	—	MRRILLINGER-W-29955
Rilinger	—	4/7/10	—	—	Pump	—	—	13.1	7.08	2287	—	—	—	—	MRRILLINGER-W-29995
Rilinger	—	9/22/10	—	—	Pump	—	—	14.9	7.04	2337	—	—	0.07	—	MRRILLINGER-W-30023
Rilinger	—	4/21/11	—	—	Pump	—	—	13.5	7.15	1851	—	—	—	—	MRRILLINGER-W-30051
Rilinger	—	10/3/11	—	—	Pump	—	—	14.4	7.37	1944	—	—	0.00	—	MRRillinger-W-30080
Rilinger	—	3/28/12	—	—	Pump	—	—	14.6	7.10	1950	—	—	0.00	—	MRRILLINGER-W-30115
Stone	43 ^a	6/4/04	23.4	—	PDS	—	—	17.1	7.35	682	—	—	—	—	MRPRIVSTON-W-16475
Stone	43	9/14/05	17.2	40.0	—	—	—	17.3	6.81	638	—	—	—	—	MRPRSTON-W-16511
Stone	43	3/19/06	17.4	40.0	100	gal	—	12.9	6.42	650	—	213	0.00	—	MRSTONE-W-19987
Stone	43	9/19/06	18.6	38.8	41	gal	—	16.7	7.12	639	—	—	—	—	MRSTONE-W-16529
Stone	43	3/22/07	20.6	38.8	56	gal	—	16.7	6.58	679	4.71	19	0.28	35	MRSTONE-W-16560
Stone	43	10/3/07	14.6	38.6	72	gal	—	16.1	6.97	564	7.07	225	0.07	25	MRSTONE-W-16589
Stone	43	4/15/08	—	38.9	—	—	—	11.3	7.45	557	—	—	0.00	—	MRSTONE-W-23244
Stone	43	10/21/08	—	—	5	gal	—	—	—	—	—	—	—	—	MRSTONE-W-27634
Stone	43	4/23/09	—	—	5	gal	—	13.9	7.12	588	—	—	—	—	MRSTONE-W-27666
Stone	43	9/2/09	—	—	5	gal	—	13.8	7.40	623	—	—	—	—	MRSTONE-W-29956
Stone	43	4/7/10	—	—	5	gal	—	10.9	6.83	468	—	—	—	—	MRSTONE-W-29996
Stone	43	9/22/10	—	—	5	gal	—	15.3	7.21	552	—	—	—	—	MRSTONE-W-30024
Stone	43	4/21/11	—	—	5	gal	—	12.5	7.52	455	—	—	—	—	MRSTONE-W-30052
Stone	43	10/3/11	—	—	5	gal	—	14.0	7.38	495	—	—	0.04	—	MRStone-W-30081
Stone	43	3/28/12	—	—	5	gal	—	14.2	7.24	498	—	—	0.00	—	MRSTONE-W-30116
TD12	27-67	4/20/11	—	—	—	—	—	—	—	—	—	—	—	—	MRTD12-W-30053
TD12	27-67	10/3/11	—	—	—	—	—	14.2	7.46	2083	—	—	—	—	MRTD12-W-30082
TD12	27-67	3/28/12	—	—	—	—	—	13.5	7.16	2006	—	—	0.00	—	MRTD12-W-30117

^a Not measured.

^b TWV, three well volumes.

^c PDS, purged dry and then sampled.

^d The well's dedicated pump was used for sampling. The pump was allowed to run before the sample was collected.

^e Total depth.

TABLE 3.5 Results of analyses by TestAmerica for nitrate in groundwater samples collected in 2012.

Location	Sample	Sample Date	Screen Interval (ft BGL)	Nitrate (mg/L)
MW1S	MRMW1S3X-W-30102	3/29/12	11-51	9.6
MW1D	MRMW1D-W-30103	3/28/12	63-88	ND ^a
MW2S	MRMW2S-W-30104	3/28/12	13-53	16
MW3S	MRMW3S-W-30105	3/28/12	18-48	16
MW4S	MRMW4S-W-30106	3/28/12	17-47	19
MW5S	MRMW5S-W-30107	3/28/12	15-55	14
MW6S	MRMW6S-W-30108	3/28/12	10-25	0.095 J ^b
MW7S	MRMW7S-W-30109	3/28/12	20-45	22
MW8S	MRMW8S-W-30110	3/28/12	10-25	9.8
MW9S	MRMW9S-W-30111	3/28/12	38.83-53.83	14
MW10S	MRMW10S-W-30112	3/28/12	30-45	11
MW11S	MRMW11S-W-30113	3/28/12	53-68	18
Isch	MRISCH-W-30114	3/28/12	–	ND
Rilinger	MRRILLINGER-W-30115	3/28/12	–	3.3
Stone	MRSTONE-W-30116	3/28/12	–	6.2
TD12	MRTD12-W-30117	3/28/12	27-67	0.27

^a ND, not detected at a method quantitation limit of 0.1 mg/L.

^b Qualifier J indicates an estimated concentration below the method quantitation limit of 0.1 mg/L.

TABLE 3.6 Results of analyses at the AGEM Laboratory for volatile organic compounds in surface water and sediment samples collected in 2007-2012.^a

Location	Sample	Sample Date	Medium	Concentration (µg/L in water; µg/kg in sediment)			Quantitation Limit
				Carbon Tetrachloride	Chloroform	Methylene Chloride	
SM1	MRSM1-W-16572	3/22/07	Water	ND ^b	ND	ND	1
SM1	MRSM1-S-16573	3/22/07	Sediment	ND	ND	ND	10
SM1	MRSM1-W-16583	10/8/07	Water	ND	ND	ND	1
SM1	MRSM1-S-16584	10/8/07	Sediment	ND	ND	ND	10
SM1	MRSM1-W-23254	4/14/08	Water	ND	ND	ND	1
SM1	MRSM1-S-23254	4/14/08	Sediment	ND	ND	ND	10
SM1	MRSM1-W-27644	10/20/08	Water	ND	ND	ND	1
SM1	MRSM1-S-27644	10/20/08	Sediment	ND	ND	ND	10
SM1	MRSM1-W-27676	4/22/09	Water	ND	ND	ND	1
SM1	MRSM1-S-27676	4/22/09	Sediment	ND	ND	ND	10
SM1	MRSM1-W-29966	9/2/09	Water	ND	ND	ND	1
SM1	MRSM1-S-29966	9/2/09	Sediment	ND	ND	ND	10
SM1	MRSM1-W-29974	4/6/10	Water	ND	ND	ND	1
SM1	MRSM1-S-29974	4/6/10	Sediment	ND	ND	ND	10
SM1	MRSM1-W-30005	9/22/10	Water	ND	ND	ND	1
SM1	MRSM1-S-30005	9/22/10	Sediment	ND	ND	ND	10
SM1	MRSM1-W-29974	4/6/10	Water	ND	ND	ND	1
SM1	MRSM1-S-29974	4/6/10	Sediment	ND	ND	ND	10
SM1	MRSM1-W-30062	10/3/11	Water	ND	ND	ND	1
SM1	MRSM1-S-30062	10/3/11	Sediment	ND	ND	ND	10
SM1	MRSM1-W-30094	3/27/12	Water	ND	ND	ND	1
SM1	MRSM1-S-30094	3/27/12	Sediment	ND	ND	ND	10
SM2	MRSM2-W-16574	3/22/07	Water	ND	ND	ND	1
SM2	MRSM2-S-16575	3/22/07	Sediment	ND	ND	ND	10
SM2	MRSM2-W-16585	10/8/07	Water	ND	ND	ND	1
SM2	MRSM2-S-16586	10/8/07	Sediment	ND	ND	ND	10
SM2	MRSM2-W-23255	4/14/08	Water	ND	ND	ND	1
SM2	MRSM2-S-23255	4/14/08	Sediment	ND	ND	ND	10
SM2	MRSM2-W-27645	10/20/08	Water	ND	ND	ND	1
SM2	MRSM2-S-27645	10/20/08	Sediment	ND	ND	ND	10
SM2	MRSM2-W-27677	4/22/09	Water	ND	ND	ND	1
SM2	MRSM2-S-27677	4/22/09	Sediment	ND	ND	ND	10
SM2	MRSM2-W-29967	9/2/09	Water	ND	ND	ND	1
SM2	MRSM2-S-29967	9/2/09	Sediment	ND	ND	ND	10
SM2	MRSM2-W-29975	4/6/10	Water	ND	ND	ND	1
SM2	MRSM2-S-29975	4/6/10	Sediment	ND	ND	ND	10
SM2	MRSM2-W-30006	9/22/10	Water	ND	ND	ND	1
SM2	MRSM2-S-30006	9/22/10	Sediment	ND	ND	ND	10
SM2	MRSM2-W-29975	4/6/10	Water	ND	ND	ND	1
SM2	MRSM2-S-29975	4/6/10	Sediment	ND	ND	ND	10
SM2	MRSM2-W-30063	10/3/11	Water	ND	ND	ND	1
SM2	MRSM2-S-30063	10/3/11	Sediment	ND	ND	ND	10
SM2	MRSM2-W-30095	3/27/12	Water	ND	ND	ND	1
SM2	MRSM2-S-30095	3/27/12	Sediment	ND	ND	ND	10
SM3	MRSM3-W-16576	3/22/07	Water	ND	ND	ND	1
SM3	MRSM3-S-16577	3/22/07	Sediment	ND	ND	ND	10
SM3	MRSM3-W-16587	10/8/07	Water	ND	ND	ND	1
SM3	MRSM3-S-16588	10/8/07	Sediment	ND	ND	ND	10
SM3	MRSM3-W-23256	4/14/08	Water	ND	ND	ND	1

TABLE 3.6 (Cont.)

Location	Sample	Sample Date	Medium	Concentration (µg/L in water; µg/kg in sediment)			Quantitation Limit
				Carbon Tetrachloride	Chloroform	Methylene Chloride	
SM3	MRSM3-S-23256	4/14/08	Sediment	ND	ND	ND	10
SM3	MRSM3-W-27646	10/20/08	Water	ND	ND	ND	1
SM3	MRSM3-S-27646	10/20/08	Sediment	ND	ND	ND	10
SM3	MRSM3-W-27678	4/22/09	Water	ND	ND	ND	1
SM3	MRSM3-S-27678	4/22/09	Sediment	ND	ND	ND	10
SM3	MRSM3-W-29968	9/2/09	Water	ND	ND	ND	1
SM3	MRSM3-S-29968	9/2/09	Sediment	ND	ND	ND	10
SM3	MRSM3-W-29976	4/6/10	Water	ND	ND	ND	1
SM3	MRSM3-S-29976	4/6/10	Sediment	ND	ND	ND	10
SM3	MRSM3-W-30007	9/22/10	Water	ND	ND	ND	1
SM3	MRSM3-S-30007	9/22/10	Sediment	ND	ND	ND	10
SM3	MRSM3-W-29976	4/6/10	Water	ND	ND	ND	1
SM3	MRSM3-S-29976	4/6/10	Sediment	ND	ND	ND	10
SM3	MRSM3-W-30064	10/3/11	Water	ND	ND	ND	1
SM3	MRSM3-S-30064	10/3/11	Sediment	ND	ND	ND	10
SM3	MRSM3-W-30096	3/27/12	Water	ND	ND	ND	1
SM3	MRSM3-S-30096	3/27/12	Sediment	ND	ND	ND	10
SM4	MRSM4-W-16578	3/22/07	Water	ND	ND	ND	1
SM4	MRSM4-S-16579	3/22/07	Sediment	ND	ND	ND	10
SM4	MRSM4-W-16589	10/8/07	Water	ND	ND	ND	1
SM4	MRSM4-S-16590	10/8/07	Sediment	ND	ND	ND	10
SM4	MRSM4-W-23257	4/14/08	Water	ND	ND	ND	1
SM4	MRSM4-S-23257	4/14/08	Sediment	ND	ND	ND	10
SM4	MRSM4-W-27647	10/20/08	Water	ND	ND	ND	1
SM4	MRSM4-S-27647	10/20/08	Sediment	ND	ND	ND	10
SM4	MRSM4-W-27679	4/22/09	Water	ND	ND	ND	1
SM4	MRSM4-S-27679	4/22/09	Sediment	ND	ND	ND	10
SM4	MRSM4-W-29969	9/2/09	Water	ND	ND	ND	1
SM4	MRSM4-S-29969	9/2/09	Sediment	ND	ND	ND	10
SM4	MRSM4-W-29977	4/6/10	Water	ND	ND	ND	1
SM4	MRSM4-S-29977	4/6/10	Sediment	ND	ND	ND	10
SM4	MRSM4-W-30008	9/22/10	Water	ND	ND	ND	1
SM4	MRSM4-S-30008	9/22/10	Sediment	ND	ND	ND	10
SM4	MRSM4-W-29977	4/6/10	Water	ND	ND	ND	1
SM4	MRSM4-S-29977	4/6/10	Sediment	ND	ND	ND	10
SM4	MRSM4-W-30065	10/3/11	Water	ND	ND	ND	1
SM4	MRSM4-S-30065	10/3/11	Sediment	ND	ND	ND	10
SM4	MRSM4-W-30097	3/27/12	Water	ND	ND	ND	1
SM4	MRSM4-S-30097	3/27/12	Sediment	ND	ND	ND	10
SMB	MR SMB-W-16570	3/22/07	Water	ND	ND	ND	1
SMB	MR SMB-S-16571	3/22/07	Sediment	ND	ND	ND	10
SMB	MR SMB-W-16581	10/8/07	Water	ND	ND	ND	1
SMB	MR SMB-S-16582	10/8/07	Sediment	ND	ND	ND	10
SMB	MR SMB-W-23258	4/14/08	Water	ND	ND	ND	1
SMB	MR SMB-S-23258	4/14/08	Sediment	ND	ND	ND	10
SMB	MR SMB-W-27648	10/20/08	Water	ND	ND	ND	1
SMB	MR SMB-S-27648	10/20/08	Sediment	ND	ND	ND	10
SMB	MR SMB-W-27680	4/22/09	Water	ND	ND	ND	1
SMB	MR SMB-S-27680	4/22/09	Sediment	ND	ND	ND	10
SMB	MR SMB-W-29970	9/2/09	Water	ND	ND	ND	1
SMB	MR SMB-S-29970	9/2/09	Sediment	ND	ND	ND	10

TABLE 3.6 (Cont.)

Location	Sample	Sample Date	Medium	Concentration (µg/L in water; µg/kg in sediment)			Quantitation Limit
				Carbon Tetrachloride	Chloroform	Methylene Chloride	
SMB	MRSMB-W-29978	4/6/10	Water	ND	ND	ND	1
SMB	MRSMB-S-29978	4/6/10	Sediment	ND	ND	ND	10
SMB	MRSMB-W-30009	9/22/10	Water	ND	ND	ND	1
SMB	MRSMB-S-30009	9/22/10	Sediment	ND	ND	ND	10
SMB	MRSMB-W-29978	4/6/10	Water	ND	ND	ND	1
SMB	MRSMB-S-29978	4/6/10	Sediment	ND	ND	ND	10
SMB	MRSMB-W-30066	10/3/11	Water	ND	ND	ND	1
SMB	MRSMB-S-30066	10/3/11	Sediment	ND	ND	ND	10
SMB	MRSMB-W-30098	3/27/12	Water	ND	ND	ND	1
SMB	MRSMB-S-30098	3/27/12	Sediment	ND	ND	ND	10

^a Analyses conducted at the AGEM Laboratory by EPA Method 524.2 for surface water samples or modified EPA Method 5030B/8260B for sediment samples.

^b ND, not detected at the instrument detection limit of 0.1 µg/L for surface water samples or 1.0 µg/kg for sediment samples.

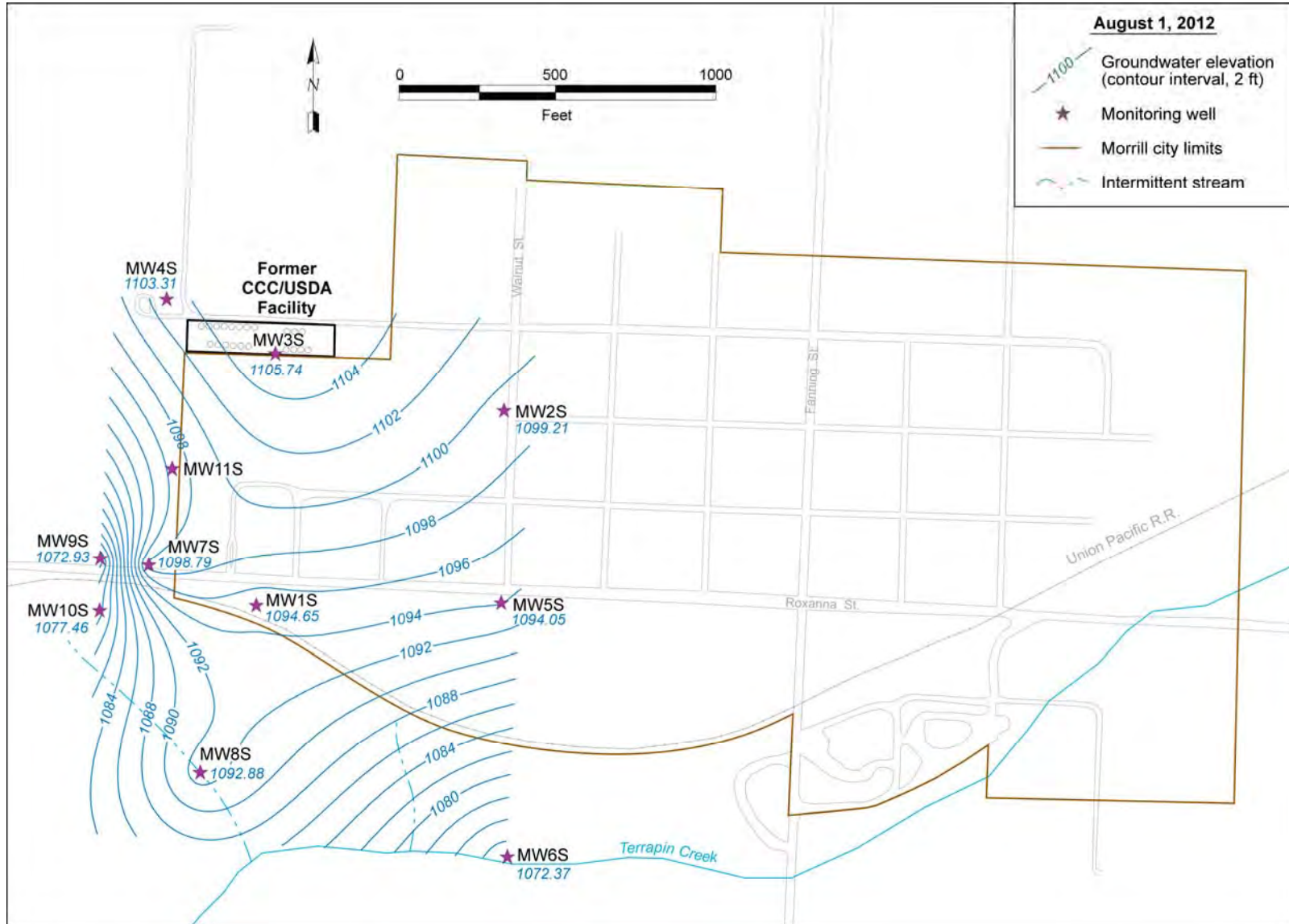


FIGURE 3.1 Potentiometric surface based on water levels measured manually on August 1, 2012.

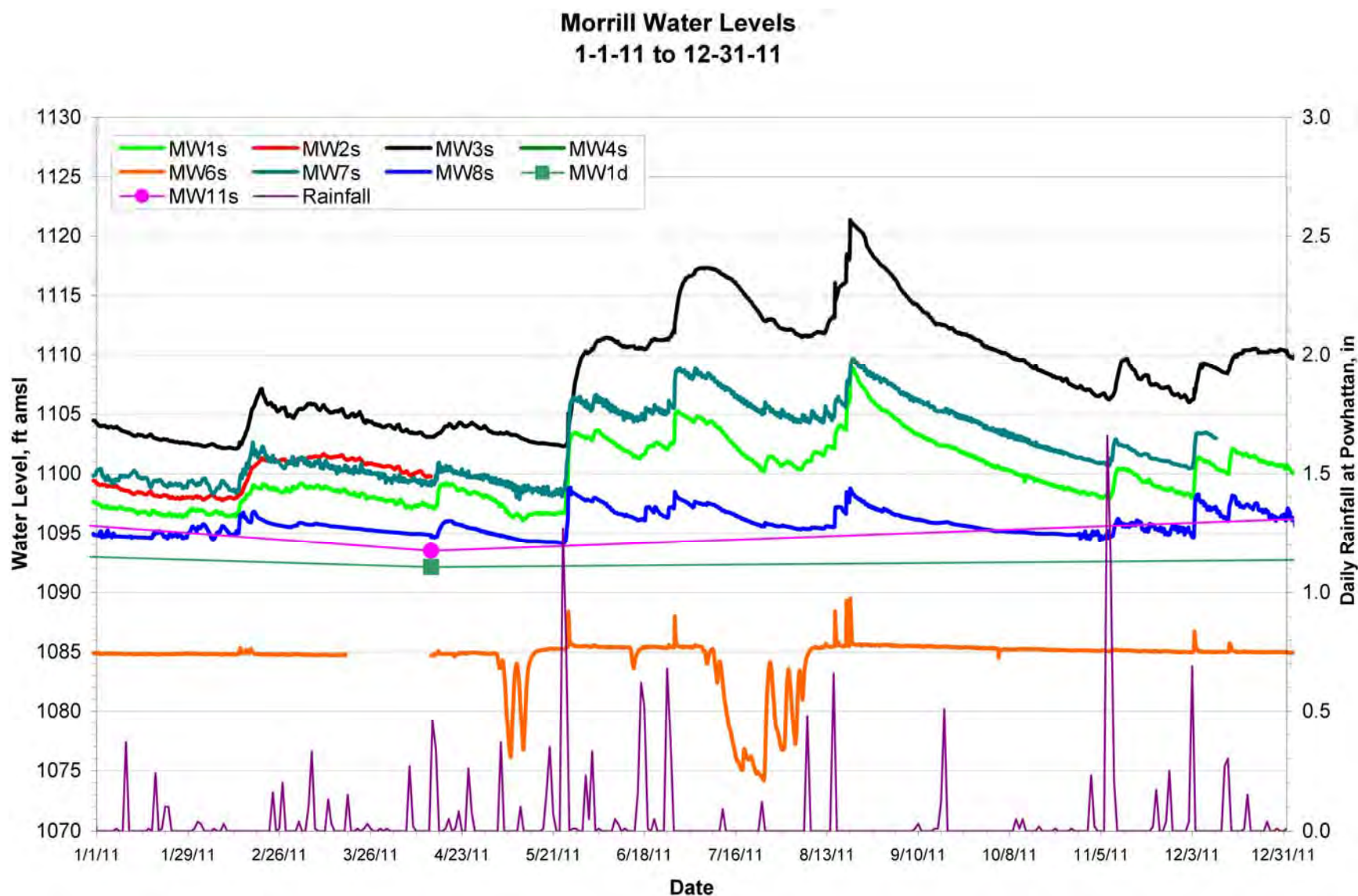


FIGURE 3.2a Hydrographs summarizing results of long-term water level monitoring from January 1, 2011, to December 31, 2011. Data for wells MW1D and MW11S are manual measurements made when the data loggers were downloaded.

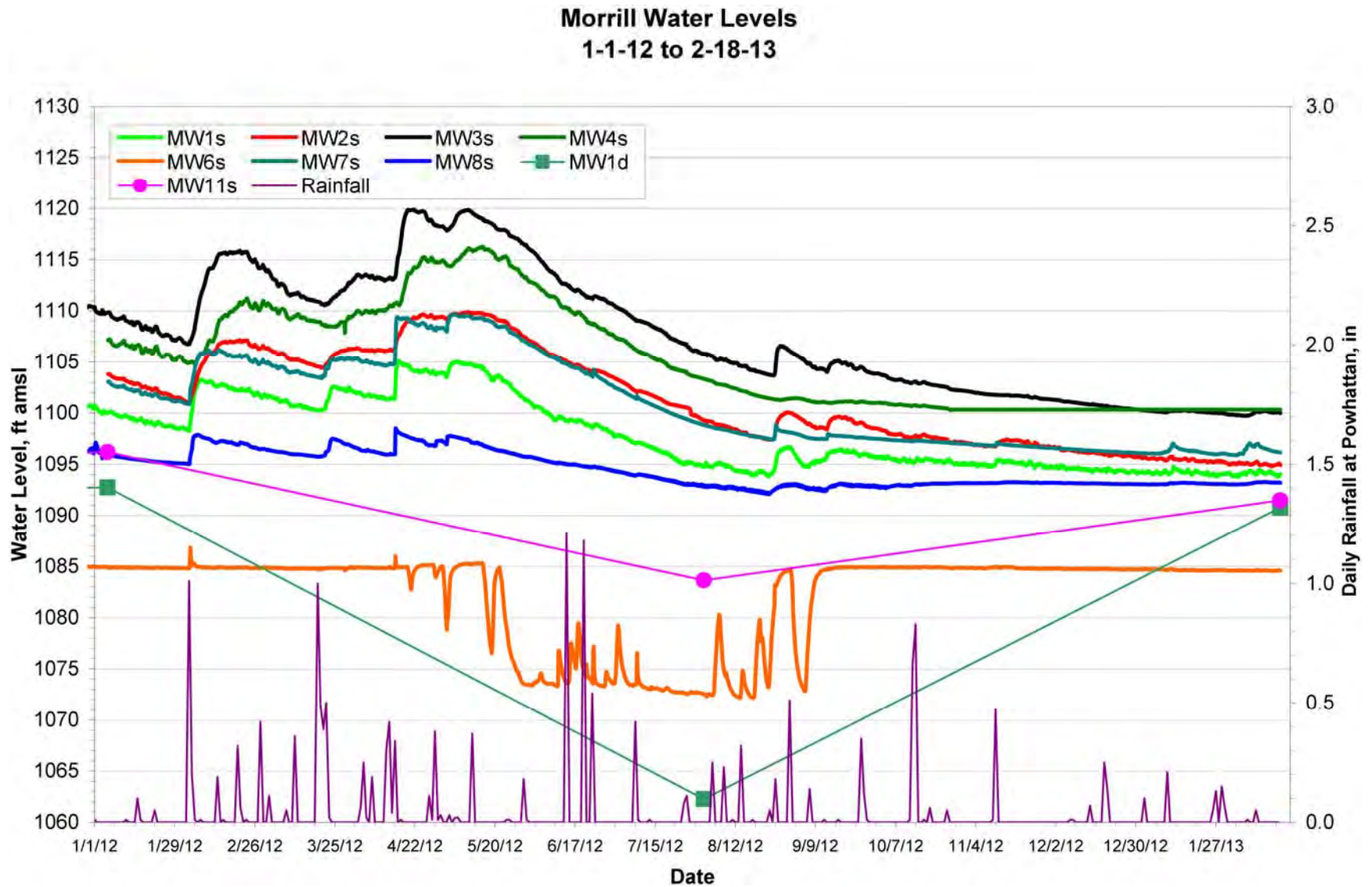


FIGURE 3.2b Hydrographs summarizing results of long-term water level monitoring from January 1, 2012, to February 18, 2013. Data for wells MW1D and MW11S are manual measurements made when the data loggers were downloaded.

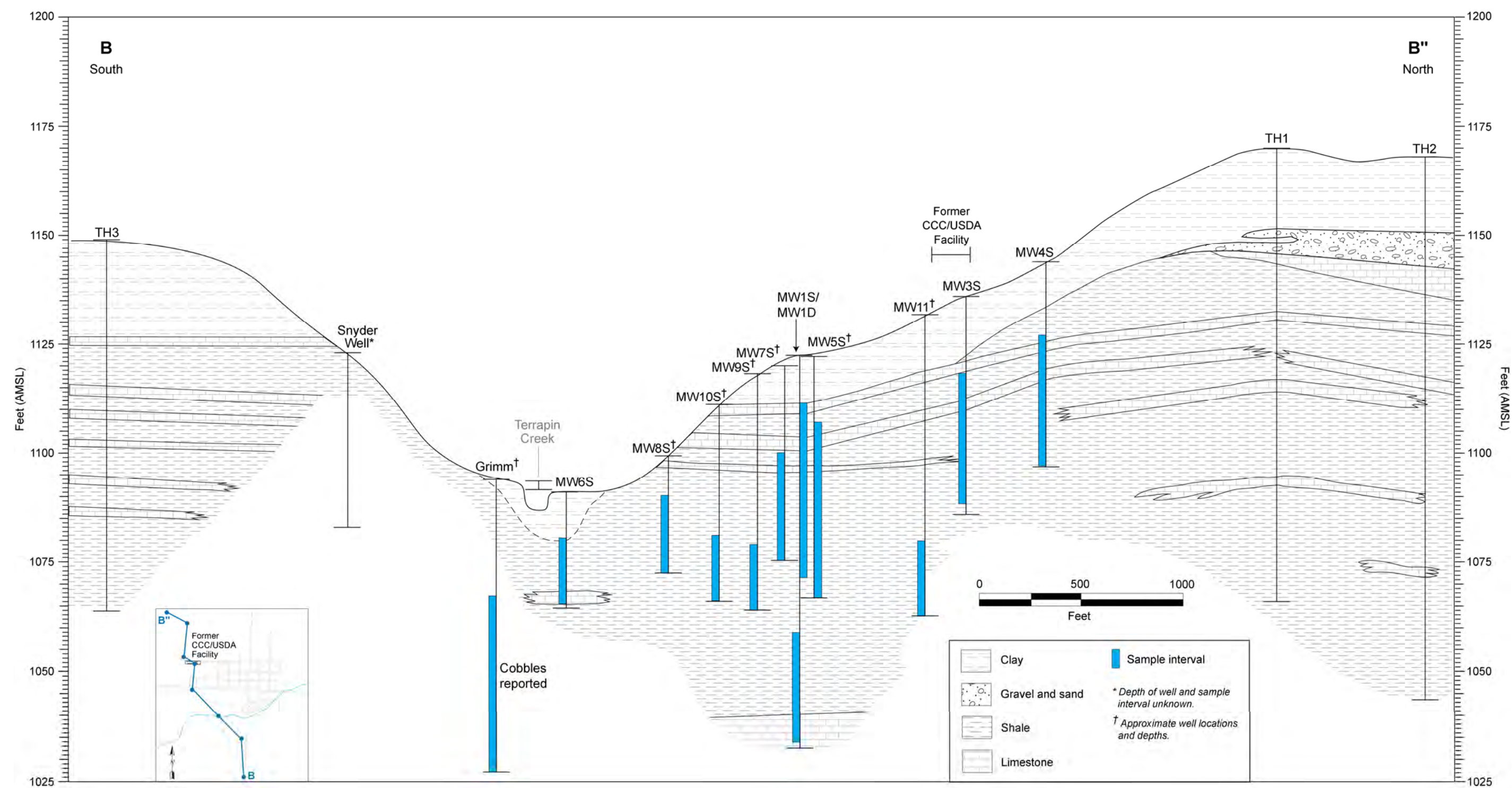


FIGURE 3.3 Interpretive south-north geologic section illustrating the stratigraphic relationships among screened intervals of wells near Terrapin Creek.

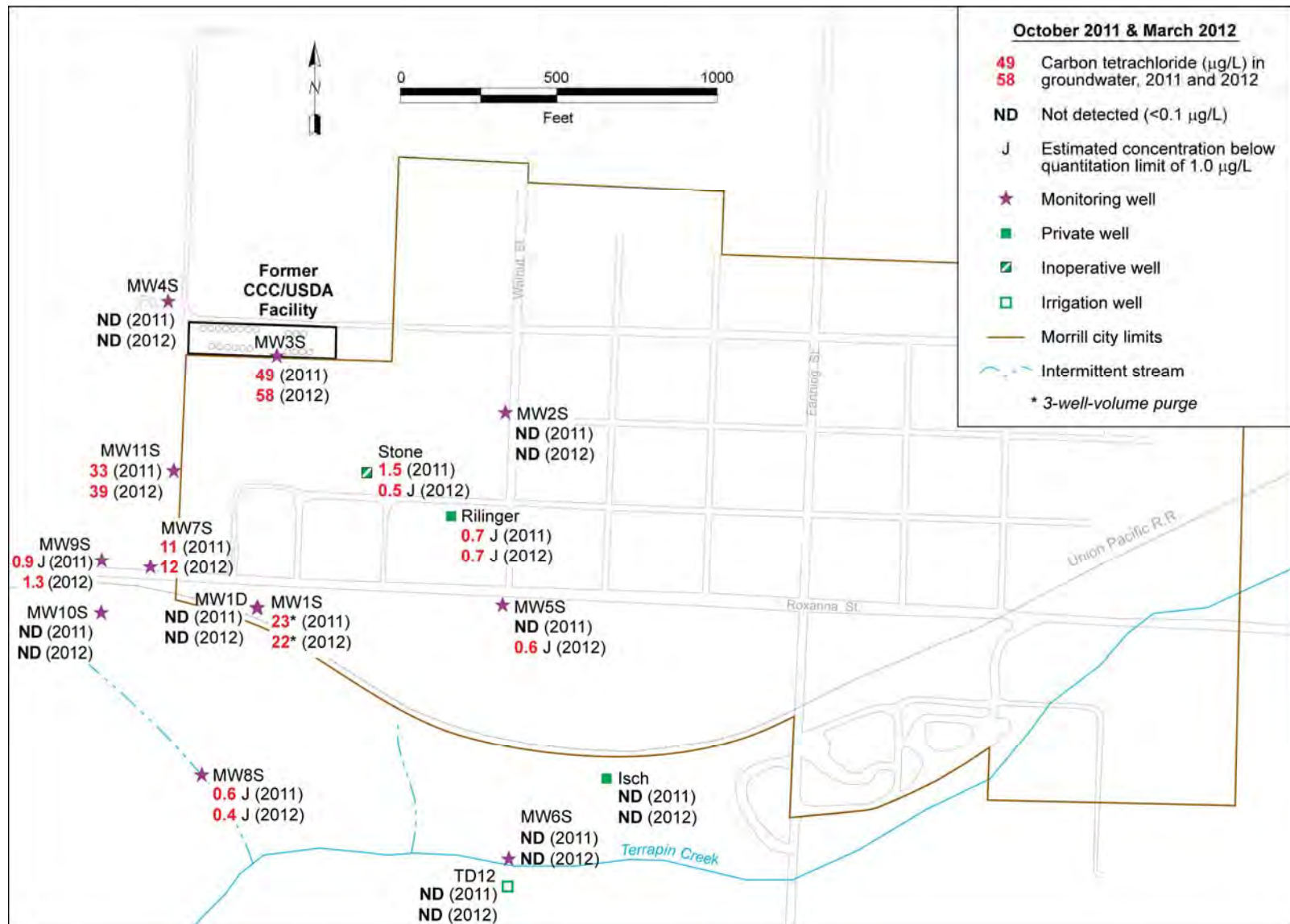


FIGURE 3.4 Carbon tetrachloride concentrations in groundwater, October 2011 and March 2012.

4 Conclusions and Future Activities

4.1 Conclusions

The findings of the March 2012 monitoring event at Morrill support the following conclusions:

- Groundwater flow during the 2012 review period (as in prior years) was predominantly to the south, from the vicinity of the former CCC/USDA facility toward Terrapin Creek. Automatic water level monitoring data indicate that, historically, spring precipitation and recharge represent the predominant factors affecting the local groundwater level patterns.
- In August 2012, groundwater levels in three monitoring wells screened in the stratigraphically deeper part of the aquifer unit were observed to have dropped significantly more than groundwater levels in the monitoring wells screened in the stratigraphically shallower part of the aquifer. In addition, the hydrograph recorded for well MW6S, directly across Terrapin Creek from the Grimm irrigation well, appears to reflect the sustained pumping of the irrigation well. Together, these observations indicate an apparent effect on the deeper part of the aquifer that has not been observed before, possibly reflecting a localized hydrologic effect of the Grimm irrigation well.
- No significant changes were observed in the concentration or distribution of carbon tetrachloride in groundwater during the March 2012 monitoring event versus the spring and fall 2011 monitoring events. In March 2012, a maximum carbon tetrachloride concentration of 58 µg/L was identified in groundwater at well MW3S on the former CCC/USDA facility, with concentrations decreasing downgradient toward Terrapin Creek. Chloroform concentrations were also consistent with recent previous values, with a maximum of 2.0 µg/L at well MW3S and decreasing concentrations downgradient.
- Since 2004, the accumulated results of many sampling events have demonstrated a significant decline in the maximum detected concentration of carbon tetrachloride in groundwater. In 1995, the contaminant was detected at

the former CCC/USDA facility at 390 µg/L (well MW3S), whereas the maximum level in 2012 was 58 µg/L. Chloroform concentrations in well MW3S at the former CCC/USDA facility have decreased from 9.6 µg/L in 1995 to 2.0 µg/L in 2012. These are decreases of 85% for carbon tetrachloride and 79% for chloroform. The changes in carbon tetrachloride concentrations at wells sampled in 1995-2012 are illustrated in Figure 4.1.

- The residual contaminant plume extending from the former CCC/USDA facility southward toward Terrapin Creek is well-defined and is slowly declining in concentration naturally.
- No carbon tetrachloride contamination was detected in 2012 in surface waters or shallow streambed sediments sampled at five locations along Terrapin Creek, downgradient from the former CCC/USDA facility. These results indicate that Terrapin Creek remains unaffected by the carbon tetrachloride plume.
- Since 2007, the accumulated results of several monitoring events for surface water and sediment in Terrapin Creek have demonstrated no impact to the sediment and surface waters of the creek by carbon tetrachloride and no imminent risk for further degradation of the creek.
- Terrapin Creek (tributary segment 308 to Walnut Creek) receives discharge from the Morrill wastewater treatment plant and several confined animal feeding operations regulated by the KDHE. The Walnut Creek watershed is designated by the KDHE as impaired by fecal coliform bacteria. Terrapin Creek is classified by the KDHE as not open to or accessible by the public for contact recreation and does not support the food procurement designated use (KDHE 2010).
- Use of the public water supply wells that had served Morrill in 1922-1991 was terminated because of high nitrate levels and poor water quality. Public water was subsequently obtained from the Sabetha municipal water system.

- In 2007-2011, vegetation sampling was conducted to track plume migration. Because of declining contaminant concentrations in groundwater, no immediate threat to the surface water of Terrapin Creek is apparent. Monitoring wells adjacent to and upgradient of the creek are tracking changes in contaminant concentrations, and the sampling of surface water and sediment has demonstrated the absence of carbon tetrachloride contamination in these media. Therefore, vegetation sampling has been terminated, with the approval of the KDHE (2012).
- Sampling of indoor air in August 2010 to evaluate the potential for vapor intrusion into homes overlying and within 100 ft laterally of the identified carbon tetrachloride plume resulted in no detections of carbon tetrachloride. Low concentrations of chloroform, indicative of indoor air sources, were detected. Low radon levels were also detected.

4.2 Future Activities

- The passive diffusion bag sampler placed in well MW1S in March 2012 will be retrieved during the March 2013 sampling event and analyzed. Another passive diffusion bag sampler will be deployed in this well to continue the comparison with the three-well-volume purging method. The results will be provided to the KDHE.
- Automatically measured water levels in monitoring wells will continue to be analyzed to identify possible local hydrologic effects of pumping of the Grimm irrigation well. Data loggers were installed on February 18, 2013, in wells MW1D and MW11S, which are screened in or near the stratigraphic interval that is also penetrated by the Grimm well, to facilitate this analysis.
- Annual sampling of groundwater, surface water, and sediment will continue in the spring of each year.

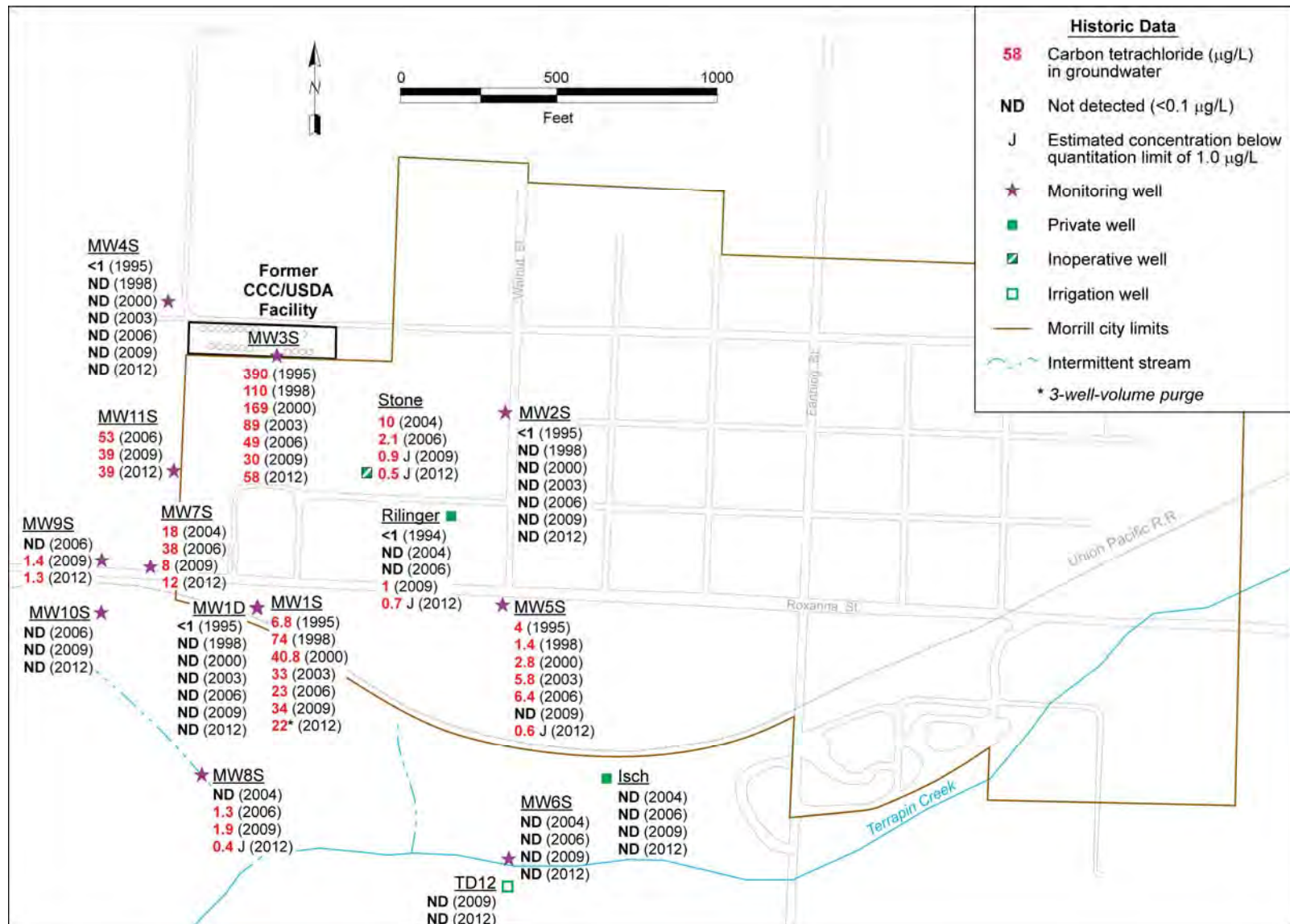


FIGURE 4.1 Historical carbon tetrachloride concentrations in groundwater, 1995-2012.

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Appendix A:

Sampling Activities at Morrill in 2012

TABLE A.1 Sequence of sampling activities in 2012.

Sample Date and Time	Sample	Sample Medium ^a	Sample Type ^a	Location	Depth (ft BGL)	Chain of Custody	Shipping Date and Time	Sample Description
3/27/12 16:38	MRSMB-W-30097	Water	SW	SM4	–	2891	3/27/12 17:35	Water sample from Terrapin Creek.
3/27/12 16:39	MRSMB-S-30097	Soil	Sed	SM4	–	2890	3/27/12 17:35	Sediment sample from Terrapin Creek.
3/27/12 16:48	MRSMB-W-30096	Water	SW	SM3	–	2891	3/27/12 17:35	Water sample from Terrapin Creek.
3/27/12 16:49	MRSMB-S-30096	Soil	Sed	SM3	–	2890	3/27/12 17:35	Sediment sample from Terrapin Creek.
3/27/12 16:52	MRSMB-W-30095	Water	SW	SM2	–	2891	3/27/12 17:35	Water sample from Terrapin Creek.
3/27/12 16:53	MRSMB-S-30095	Soil	Sed	SM2	–	2890	3/27/12 17:35	Sediment sample from Terrapin Creek.
3/27/12 16:56	MRSMB-W-30094	Water	SW	SM1	–	2891	3/27/12 17:35	Water sample from Terrapin Creek.
3/27/12 16:57	MRSMB-S-30094	Soil	Sed	SM1	–	2890	3/27/12 17:35	Sediment sample from Terrapin Creek.
3/27/12 17:04	MRSMB-W-30098	Water	SW	SMB	–	2891	3/27/12 17:35	Water sample from Terrapin Creek.
3/27/12 17:05	MRSMB-S-30098	Soil	Sed	SMB	–	2890	3/27/12 17:35	Sediment sample from Terrapin Creek.
3/27/12 17:20	MRQCFB-W-30128 ^b	Water	TB	QC	–	2891	3/27/12 17:35	Trip blank sent to the AGEM Laboratory for VOCs analysis with water samples listed on chain-of-custody form (COC) 2891.
3/28/12 9:00	MRQCFB-W-30129 ^b	Water	TB	QC	–	2900	3/28/12 21:00	Trip blank sent to the AGEM Laboratory for VOCs analysis with water samples listed on COCs 2892 and 2900.
3/28/12 10:43	MRMW6S-W-30108	Water	MW	MW6S	10-25	2892	3/28/12 21:00	Depth to water = 6.38 ft. Depth of 4-in. well = 26.9 ft. Sample collected by using low-flow bladder pump after purging of 7 L. Pump intake positioned at 17.5 ft.
3/28/12 11:02	MRMW1D-W-30103	Water	MW	MW1D	63-88	2892	3/28/12 21:00	Depth to water = 30.50 ft. Depth of 4-in. well = 89 ft. Sample collected by using low-flow bladder pump after purging of 5.8 L. Pump intake positioned at 75.5 ft.
3/28/12 11:03	MRMW1DDUP-W-30118 ^b	Water	MW	MW1D	63-88	2900	3/28/12 21:00	Replicate of sample MRMW1D-W-30103.
3/28/12 11:43	MRMW8S-W-30110	Water	MW	MW8S	10-25	2892	3/28/12 21:00	Depth to water = 1.38 ft. Depth of 4-in. well = 26.8 ft. Sample collected by using low-flow bladder pump after purging of 6.25 L. Pump intake positioned at 17 ft.
3/28/12 12:00	MRQCIR-W-30122 ^b	Water	RI	QC	–	2892	3/28/12 21:00	Rinsate of decontaminated sampling line after collection of sample MRMW8S-W-30110.
3/28/12 12:36	MRMW10S-W-30112	Water	MW	MW10S	30-45	2892	3/28/12 21:00	Depth to water = 12.76 ft. Depth of 2-in. well = 49.7 ft. Sample collected by using low-flow bladder pump after purging of 8 L. Pump intake positioned at 37.5 ft.
3/28/12 12:37	MRMW10SDUP-W-30119 ^b	Water	MW	MW10S	30-45	2900	3/28/12 21:00	Replicate of sample MRMW10S-W-30112.
3/28/12 12:48	MRMW4S-W-30106	Water	MW	MW4S	17-47	2892	3/28/12 21:00	Depth to water = 35.10 ft. Depth of 4-in. well = 47.8 ft. Sample collected by using low-flow bladder pump after purging of 7.2 L. Pump intake positioned at 41.45 ft.

TABLE A.1 (Cont.)

Sample Date and Time		Sample	Sample Medium ^a	Sample Type ^a	Location	Depth (ft BGL)	Chain of Custody	Shipping Date and Time		Sample Description
3/28/12	13:42	MRMW3S-W-30105	Water	MW	MW3S	18-48	2892	3/28/12	21:00	Depth to water = 23.95 ft. Depth of 4-in. well = 47.8 ft. Sample collected by using low-flow bladder pump after purging of 6.5 L. Pump intake positioned at 35.88 ft.
3/28/12	13:56	MRQCIR-W-30123 ^b	Water	RI	QC	–	2892	3/28/12	21:00	Rinsate of decontaminated sampling line after collection of sample MRMW3S-W-30105.
3/28/12	13:56	MRMW11S-W-30113	Water	MW	MW11S	53-68	2892	3/28/12	21:00	Depth to water = 36.46 ft. Depth of 2-in. well = 72.7 ft. Sample collected by using low-flow bladder pump after purging of 6 L. Pump intake positioned at 60.5 ft.
3/28/12	14:10	MRQCIR-W-30124 ^b	Water	RI	QC	–	2892	3/28/12	21:00	Rinsate of decontaminated sampling line after collection of sample MRMW11S-W-30113.
3/28/12	14:42	MRMW2S-W-30104	Water	MW	MW2S	13-53	2892	3/28/12	21:00	Depth to water = 31.45 ft. Depth of 4-in. well = 53.5 ft. Sample collected by using low-flow bladder pump after purging of 7.0 L. Pump intake positioned at 42.48 ft.
3/28/12	14:54	MRMW9S-W-30111	Water	MW	MW9S	38.83-53.83	2892	3/28/12	21:00	Depth to water = 23.19 ft. Depth of 2-in. well = 58.5 ft. Sample collected by using low-flow bladder pump after purging of 6.25L. Pump intake positioned at 46.33 ft.
3/28/12	15:43	MRMW7S-W-30109	Water	MW	MW7S	20-45	2892	3/28/12	21:00	Depth to water = 15.35 ft. Depth of 4-in. well = 47 ft. Sample collected by using low-flow bladder pump after purging of 8 L. Pump intake positioned at 32.5 ft.
3/28/12	15:46	MRMW5S-W-30107	Water	MW	MW5S	15-55	2892	3/28/12	21:00	Depth to water = 20.60 ft. Depth of 4-in. well = 54.6 ft. Sample collected by using low-flow bladder pump after purging of 7.0 L. Pump intake positioned at 37.6 ft.
3/28/12	16:20	MRSTONE-W-30116	Water	DW	Stone	–	2900	3/28/12	21:00	Stone private well. Bailed 5 gal and then collected sample with bailer.
3/28/12	16:34	MRRILLINGER-W-30115	Water	DW	Rilinger	–	2900	3/28/12	21:00	Rilinger private well. Let pump run for 5 min, then collected a sample.
3/28/12	16:50	MRISCH-W-30114	Water	DW	Isch	–	2900	3/28/12	21:00	Isch (co-op) private well. Let pump run for 5 min, then collected a sample. Co-op has been using well off and on during the past week.
3/28/12	17:02	MRTD12-W-30117	Water	DW	TD12	27-67	2900	3/28/12	21:00	Collected from Grimm well overflow before the catch pond.
3/29/12	10:00	MRQCFB-W-30130 ^b	Water	TB	QC	–	2894	3/29/12	16:02	Trip blank sent to the AGEM Laboratory for VOCs analysis with water samples listed on COC 2894. Blank shipped with samples.

TABLE A.1 (Cont.)

Sample Date and Time		Sample	Sample Medium ^a	Sample Type ^a	Location	Depth (ft BGL)	Chain of Custody	Shipping Date and Time		Sample Description
3/29/12	12:10	MRMW1SU-W-30099	Water	MW	MW1S	11-51	2894	3/29/12	16:02	Depth to water = 20.10 ft. Depth of 4-in. well = 54 ft. Sample collected by using low-flow bladder pump after purging of 8 L. Pump intake positioned at 25 ft.
3/29/12	12:18	MRQCIR-W-30121 ^b	Water	RI	QC	–	2894	3/29/12	16:02	Rinsate of decontaminated sampling line after collection of sample MRMW1SU-W-30099.
3/29/12	12:56	MRMW1SM-W-30100	Water	MW	MW1S	11-51	2894	3/29/12	16:02	Depth to water = 20.17 ft. Depth of 4-in. well = 54 ft. Sample collected by using low-flow bladder pump after purging of 8 L. Pump intake positioned at 35 ft.
3/29/12	13:02	MRQCIR-W-30120 ^b	Water	RI	QC	–	2894	3/29/12	16:02	Rinsate of decontaminated sampling line after collection of sample MRMW1SM-W-30100.
3/29/12	13:52	MRMW1SL-W-30101	Water	MW	MW1S	11-51	2894	3/29/12	16:02	Depth to water = 20.17 ft. Depth of 4-in. well = 54 ft. Sample collected by using low-flow bladder pump after purging of 8 L. Pump intake positioned at 46 ft.
3/29/12	13:55	MRQCIR-W-30125 ^b	Water	RI	QC	–	2894	3/29/12	16:02	Rinsate of decontaminated sampling line after collection of sample MRMW1SL-W-30101.
3/29/12	15:26	MRMW1S3X-W-30102	Water	MW	MW1S	11-51	2894	3/29/12	16:02	Depth to water = 20.18 ft. Depth of 4-in. well = 54 ft. Sample collected by using low-flow bladder pump after purging of 68 gallons (three well volumes). Pump intake positioned at 50 ft.
3/29/12	16:00	MRDIH2O-W-30126 ^b	Water	FB	QC	–	2894	3/29/12	16:02	Field blank of water used for equipment decontamination during the March 2012 sampling event.
3/29/12	16:30	MRQCTB-W-30127 ^b	Water	TB	QC	–	2894	3/29/12	16:02	Trip blank sent to the AGEM Laboratory for VOCs analysis with water samples listed on COC 2894. Blank stored with samples during collection, prior to shipment.

^a Medium and sample type abbreviations: DW, domestic well; MW, monitoring well; RI, equipment rinsate; sed, sediment; SW, surface water; TB, trip blank.

^b Quality control sample.

Appendix B:

Results from the AGEM Laboratory for Dual Analyses of Samples Collected at Morrill in 2012 and for Quality Control Samples

TABLE B.1 Analytical results from the AGEM Laboratory for quality control samples collected to monitor sample collection and handling activities in 2012.

Sample Date and Time	Sample	Sample Type	Concentration (µg/L)		
			Carbon Tetrachloride	Chloroform	Methylene Chloride
3/27/12 17:20	MRQCFB-W-30128	Trip blank	ND ^a	ND	ND
3/28/12 9:00	MRQCFB-W-30129	Trip blank	ND	ND	ND
3/28/12 12:00	MRQCIR-W-30122	Equipment rinsate	ND	ND	ND
3/28/12 13:56	MRQCIR-W-30123	Equipment rinsate	ND	ND	ND
3/28/12 14:10	MRQCIR-W-30124	Equipment rinsate	ND	ND	ND
3/29/12 10:00	MRQCFB-W-30130	Trip blank	ND	ND	ND
3/29/12 12:18	MRQCIR-W-30121	Equipment rinsate	ND	ND	ND
3/29/12 13:02	MRQCIR-W-30120	Equipment rinsate	ND	ND	ND
3/29/12 13:55	MRQCIR-W-30125	Equipment rinsate	ND	ND	ND
3/29/12 16:00	MRDIH2O-W-30126	Field blank	ND	ND	ND
3/29/12 16:30	MRQCTB-W-30127	Trip blank	ND	ND	ND

^a ND, contaminant not detected at an instrument detection limit of 0.1 µg/L.

TABLE B.2 Analytical results from the AGEM Laboratory for dual analyses of samples collected in 2012.

Sample Date and Time	Location	Sample	Analysis Type	Depth (ft BGL)	Sample Medium	Analytical Method	Analysis Date and Time	Concentration (µg/kg in soil; µg/L in water)		
								Carbon Tetrachloride	Chloroform	Methylene Chloride
3/27/12 16:39	SM4	MRS4-S-30097	Primary sample	—	Sediment	SW8260B	3/30/12 14:40	ND	ND	ND
3/27/12 16:39	SM4	MRS4-S-30097DUP	Duplicate analysis	—	Sediment	SW8260B	3/30/12 15:10	ND	ND	ND
3/28/12 11:02	MW1D	MRMW1D-W-30103	Primary sample	63-88	Water	E524.2	3/29/12 11:04	ND	ND	ND
3/28/12 11:03	MW1D	MRMW1DDUP-W-30118	Replicate sample	63-88	Water	E524.2	3/30/12 11:38	ND	ND	ND
3/28/12 12:36	MW10S	MRMW10S-W-30112	Primary sample	30-45	Water	E524.2	3/29/12 16:16	ND	0.3 J	ND
3/28/12 12:37	MW10S	MRMW10SDUP-W-30119	Replicate sample	30-45	Water	E524.2	3/30/12 12:09	ND	0.3 J	ND
3/28/12 13:42	MW3S	MRMW3S-W-30105	Primary sample	18-48	Water	E524.2	3/29/12 12:07	58	2	ND
3/28/12 13:42	MW3S	MRMW3S-W-30105DUP	Duplicate analysis	18-48	Water	E524.2	3/29/12 12:38	57	1.9	ND
3/29/12 12:10	MW1S	MRMW1SU-W-30099	Primary sample	11-51	Water	E524.2	3/30/12 14:42	ND	ND	ND
3/29/12 12:10	MW1S	MRMW1SU-W-30099DUP	Duplicate analysis	11-51	Water	E524.2	3/30/12 15:13	ND	ND	ND

^a ND, contaminant not detected at an instrument detection limit of 0.1 µg/L for water analyses or 1.0 µg/kg for soil analyses.

^b Qualifier J indicates an estimated concentration below the purge-and-trap method quantitation limit for water of 1.0 µg/L.

TABLE B.3 Analytical results from the AGEM Laboratory and TestAmerica for groundwater samples collected in 2012 and submitted for verification organic analysis.^a

Location	Sample	Concentration (µg/L)					
		AGEM Laboratory			TestAmerica		
		Carbon Tetrachloride	Chloroform	Methylene Chloride	Carbon Tetrachloride	Chloroform	Methylene Chloride
MW2S	MRMW2S-W-30104	ND ^b	ND	ND	0.2 J ^c	ND	ND
MW4S	MRMW4S-W-30106	ND	ND	ND	0.1 J	ND	ND
MW7S	MRMW7S-W-30109	12	0.3 J	ND	12	ND	ND
MW8S	MRMW8S-W-30110	0.4 J	ND	ND	0.5 J	ND	ND
QC	MRQCTB-W-30127	ND	ND	ND	ND	ND	ND

^a TestAmerica verification data are in Supplement 2 (on CD).

^b ND, contaminant not detected at instrument detection limit of 0.1 µg/L.

^c J, estimated concentration below the method quantitation limit of 1.0 µg/L for analyses at the AGEM Laboratory or 0.5 µg/L for analyses at TestAmerica.

Supplement 1:

Waste Characterization Data

November 01, 2012

Mr. Travis Kamler
TCW Construction Inc
141 M Street
Lincoln, NE 68508

RE: Project: KS/MO Waste Water
Pace Project No.: 60131732

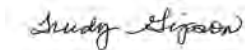
Dear Mr. Kamler:

Enclosed are the analytical results for sample(s) received by the laboratory on October 23, 2012.

The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Trudy Gipson

trudy.gipson@pacelabs.com
Project Manager

Enclosures

cc: Mr. David Surgnier



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: KS/MO Waste Water

Pace Project No.: 60131732

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60131732001	AGPURGE-W-10221	Water	10/22/12 08:00	10/23/12 08:35
60131732002	BAPURGE-W-10222	Water	10/22/12 08:10	10/23/12 08:35
60131732003	CNPURGE-W-10223	Water	10/22/12 08:20	10/23/12 08:35
60131732004	EVPURGE-W-10224	Water	10/22/12 08:30	10/23/12 08:35
60131732005	MRPURGE-W-10225	Water	10/22/12 08:40	10/23/12 08:35
60131732006	PHPURGE-W-10226	Water	10/22/12 08:50	10/23/12 08:35
60131732007	SVPURGE-W-10227	Water	10/22/12 09:00	10/23/12 08:35

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SAMPLE ANALYTE COUNT

Project: KS/MO Waste Water

Pace Project No.: 60131732

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60131732001	AGPURGE-W-10221	EPA 504.1	NAW	1
		EPA 5030B/8260	RNS	70
		EPA 353.2	SRM1	1
60131732002	BAPURGE-W-10222	EPA 504.1	NAW	1
		EPA 5030B/8260	RNS	70
		EPA 353.2	SRM1	1
60131732003	CNPURGE-W-10223	EPA 504.1	NAW	1
		EPA 5030B/8260	RNS	70
		EPA 353.2	SRM1	1
60131732004	EVPURGE-W-10224	EPA 504.1	NAW	1
		EPA 5030B/8260	RNS	70
		EPA 353.2	SRM1	1
60131732005	MRPURGE-W-10225	EPA 504.1	NAW	1
		EPA 5030B/8260	RNS	70
		EPA 353.2	SRM1	1
60131732006	PHPURGE-W-10226	EPA 504.1	NAW	1
		EPA 5030B/8260	RNS	70
		EPA 353.2	SRM1	1
60131732007	SVPURGE-W-10227	EPA 504.1	NAW	1
		EPA 5030B/8260	RNS	70
		EPA 353.2	SRM1	1

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ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: AGPURGE-W-10221		Lab ID: 60131732001	Collected: 10/22/12 08:00	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
504 GCS EDB and DBCP		Analytical Method: EPA 504.1 Preparation Method: EPA 504.1						
1,2-Dibromoethane (EDB)	ND	ug/L	0.030	1	10/25/12 00:00	10/25/12 19:50	106-93-4	
8260 MSV		Analytical Method: EPA 5030B/8260						
Acetone	ND	ug/L	10.0	1		10/26/12 15:16	67-64-1	
Benzene	ND	ug/L	1.0	1		10/26/12 15:16	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		10/26/12 15:16	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		10/26/12 15:16	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		10/26/12 15:16	75-27-4	
Bromoform	ND	ug/L	1.0	1		10/26/12 15:16	75-25-2	
Bromomethane	ND	ug/L	5.0	1		10/26/12 15:16	74-83-9	
2-Butanone (MEK)	ND	ug/L	10.0	1		10/26/12 15:16	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		10/26/12 15:16	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		10/26/12 15:16	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		10/26/12 15:16	98-06-6	
Carbon disulfide	ND	ug/L	5.0	1		10/26/12 15:16	75-15-0	
Carbon tetrachloride	1.8	ug/L	1.0	1		10/26/12 15:16	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		10/26/12 15:16	108-90-7	
Chloroethane	ND	ug/L	1.0	1		10/26/12 15:16	75-00-3	
Chloroform	ND	ug/L	1.0	1		10/26/12 15:16	67-66-3	
Chloromethane	ND	ug/L	1.0	1		10/26/12 15:16	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 15:16	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 15:16	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.5	1		10/26/12 15:16	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		10/26/12 15:16	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		10/26/12 15:16	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		10/26/12 15:16	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 15:16	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 15:16	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 15:16	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		10/26/12 15:16	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		10/26/12 15:16	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		10/26/12 15:16	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/L	1.0	1		10/26/12 15:16	540-59-0	
1,1-Dichloroethene	ND	ug/L	1.0	1		10/26/12 15:16	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 15:16	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 15:16	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 15:16	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		10/26/12 15:16	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 15:16	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		10/26/12 15:16	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 15:16	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 15:16	10061-02-6	
Ethylbenzene	ND	ug/L	1.0	1		10/26/12 15:16	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		10/26/12 15:16	87-68-3	
2-Hexanone	ND	ug/L	10.0	1		10/26/12 15:16	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		10/26/12 15:16	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		10/26/12 15:16	99-87-6	

Date: 11/01/2012 03:57 PM

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: AGPURGE-W-10221		Lab ID: 60131732001	Collected: 10/22/12 08:00	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 5030B/8260						
Methylene chloride	ND ug/L		1.0	1		10/26/12 15:16	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND ug/L		10.0	1		10/26/12 15:16	108-10-1	
Methyl-tert-butyl ether	ND ug/L		1.0	1		10/26/12 15:16	1634-04-4	
Naphthalene	ND ug/L		10.0	1		10/26/12 15:16	91-20-3	
n-Propylbenzene	ND ug/L		1.0	1		10/26/12 15:16	103-65-1	
Styrene	ND ug/L		1.0	1		10/26/12 15:16	100-42-5	
1,1,1,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 15:16	630-20-6	
1,1,2,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 15:16	79-34-5	
Tetrachloroethene	ND ug/L		1.0	1		10/26/12 15:16	127-18-4	
Toluene	ND ug/L		1.0	1		10/26/12 15:16	108-88-3	
1,2,3-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 15:16	87-61-6	
1,2,4-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 15:16	120-82-1	
1,1,1-Trichloroethane	ND ug/L		1.0	1		10/26/12 15:16	71-55-6	
1,1,2-Trichloroethane	ND ug/L		1.0	1		10/26/12 15:16	79-00-5	
Trichloroethene	ND ug/L		1.0	1		10/26/12 15:16	79-01-6	
Trichlorofluoromethane	ND ug/L		1.0	1		10/26/12 15:16	75-69-4	
1,2,3-Trichloropropane	ND ug/L		2.5	1		10/26/12 15:16	96-18-4	
1,2,4-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 15:16	95-63-6	
1,3,5-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 15:16	108-67-8	
Vinyl chloride	ND ug/L		1.0	1		10/26/12 15:16	75-01-4	
Xylene (Total)	ND ug/L		3.0	1		10/26/12 15:16	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	100 %		80-120	1		10/26/12 15:16	460-00-4	
Dibromofluoromethane (S)	94 %		80-120	1		10/26/12 15:16	1868-53-7	
1,2-Dichloroethane-d4 (S)	103 %		80-120	1		10/26/12 15:16	17060-07-0	
Toluene-d8 (S)	87 %		80-120	1		10/26/12 15:16	2037-26-5	
Preservation pH	7.0		0.10	1		10/26/12 15:16		
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2						
Nitrogen, Nitrate	9.3 mg/L		0.50	5		10/23/12 18:09		

ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: BAPURGE-W-10222		Lab ID: 60131732002	Collected: 10/22/12 08:10	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
504 GCS EDB and DBCP		Analytical Method: EPA 504.1 Preparation Method: EPA 504.1						
1,2-Dibromoethane (EDB)	ND	ug/L	0.029	1	10/25/12 00:00	10/25/12 20:01	106-93-4	
8260 MSV		Analytical Method: EPA 5030B/8260						
Acetone	ND	ug/L	10.0	1		10/26/12 15:31	67-64-1	
Benzene	ND	ug/L	1.0	1		10/26/12 15:31	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		10/26/12 15:31	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		10/26/12 15:31	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		10/26/12 15:31	75-27-4	
Bromoform	ND	ug/L	1.0	1		10/26/12 15:31	75-25-2	
Bromomethane	ND	ug/L	5.0	1		10/26/12 15:31	74-83-9	
2-Butanone (MEK)	ND	ug/L	10.0	1		10/26/12 15:31	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		10/26/12 15:31	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		10/26/12 15:31	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		10/26/12 15:31	98-06-6	
Carbon disulfide	ND	ug/L	5.0	1		10/26/12 15:31	75-15-0	
Carbon tetrachloride	2.3	ug/L	1.0	1		10/26/12 15:31	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		10/26/12 15:31	108-90-7	
Chloroethane	ND	ug/L	1.0	1		10/26/12 15:31	75-00-3	
Chloroform	ND	ug/L	1.0	1		10/26/12 15:31	67-66-3	
Chloromethane	ND	ug/L	1.0	1		10/26/12 15:31	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 15:31	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 15:31	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.5	1		10/26/12 15:31	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		10/26/12 15:31	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		10/26/12 15:31	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		10/26/12 15:31	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 15:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 15:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 15:31	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		10/26/12 15:31	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		10/26/12 15:31	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		10/26/12 15:31	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/L	1.0	1		10/26/12 15:31	540-59-0	
1,1-Dichloroethene	ND	ug/L	1.0	1		10/26/12 15:31	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 15:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 15:31	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 15:31	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		10/26/12 15:31	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 15:31	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		10/26/12 15:31	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 15:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 15:31	10061-02-6	
Ethylbenzene	ND	ug/L	1.0	1		10/26/12 15:31	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		10/26/12 15:31	87-68-3	
2-Hexanone	ND	ug/L	10.0	1		10/26/12 15:31	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		10/26/12 15:31	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		10/26/12 15:31	99-87-6	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: BAPURGE-W-10222		Lab ID: 60131732002	Collected: 10/22/12 08:10	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 5030B/8260						
Methylene chloride	ND ug/L		1.0	1		10/26/12 15:31	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND ug/L		10.0	1		10/26/12 15:31	108-10-1	
Methyl-tert-butyl ether	ND ug/L		1.0	1		10/26/12 15:31	1634-04-4	
Naphthalene	ND ug/L		10.0	1		10/26/12 15:31	91-20-3	
n-Propylbenzene	ND ug/L		1.0	1		10/26/12 15:31	103-65-1	
Styrene	ND ug/L		1.0	1		10/26/12 15:31	100-42-5	
1,1,1,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 15:31	630-20-6	
1,1,2,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 15:31	79-34-5	
Tetrachloroethene	ND ug/L		1.0	1		10/26/12 15:31	127-18-4	
Toluene	ND ug/L		1.0	1		10/26/12 15:31	108-88-3	
1,2,3-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 15:31	87-61-6	
1,2,4-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 15:31	120-82-1	
1,1,1-Trichloroethane	ND ug/L		1.0	1		10/26/12 15:31	71-55-6	
1,1,2-Trichloroethane	ND ug/L		1.0	1		10/26/12 15:31	79-00-5	
Trichloroethene	ND ug/L		1.0	1		10/26/12 15:31	79-01-6	
Trichlorofluoromethane	ND ug/L		1.0	1		10/26/12 15:31	75-69-4	
1,2,3-Trichloropropane	ND ug/L		2.5	1		10/26/12 15:31	96-18-4	
1,2,4-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 15:31	95-63-6	
1,3,5-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 15:31	108-67-8	
Vinyl chloride	ND ug/L		1.0	1		10/26/12 15:31	75-01-4	
Xylene (Total)	ND ug/L		3.0	1		10/26/12 15:31	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	101 %		80-120	1		10/26/12 15:31	460-00-4	
Dibromofluoromethane (S)	99 %		80-120	1		10/26/12 15:31	1868-53-7	
1,2-Dichloroethane-d4 (S)	107 %		80-120	1		10/26/12 15:31	17060-07-0	
Toluene-d8 (S)	93 %		80-120	1		10/26/12 15:31	2037-26-5	
Preservation pH	7.0		0.10	1		10/26/12 15:31		
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2						
Nitrogen, Nitrate	5.3 mg/L		0.20	2		10/23/12 18:10		

ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: CNPURGE-W-10223		Lab ID: 60131732003	Collected: 10/22/12 08:20	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
504 GCS EDB and DBCP		Analytical Method: EPA 504.1 Preparation Method: EPA 504.1						
1,2-Dibromoethane (EDB)	ND ug/L		0.029	1	10/25/12 00:00	10/25/12 20:12	106-93-4	
8260 MSV		Analytical Method: EPA 5030B/8260						
Acetone	ND ug/L		10.0	1		10/26/12 15:46	67-64-1	
Benzene	ND ug/L		1.0	1		10/26/12 15:46	71-43-2	
Bromobenzene	ND ug/L		1.0	1		10/26/12 15:46	108-86-1	
Bromochloromethane	ND ug/L		1.0	1		10/26/12 15:46	74-97-5	
Bromodichloromethane	ND ug/L		1.0	1		10/26/12 15:46	75-27-4	
Bromoform	ND ug/L		1.0	1		10/26/12 15:46	75-25-2	
Bromomethane	ND ug/L		5.0	1		10/26/12 15:46	74-83-9	
2-Butanone (MEK)	ND ug/L		10.0	1		10/26/12 15:46	78-93-3	
n-Butylbenzene	ND ug/L		1.0	1		10/26/12 15:46	104-51-8	
sec-Butylbenzene	ND ug/L		1.0	1		10/26/12 15:46	135-98-8	
tert-Butylbenzene	ND ug/L		1.0	1		10/26/12 15:46	98-06-6	
Carbon disulfide	ND ug/L		5.0	1		10/26/12 15:46	75-15-0	
Carbon tetrachloride	1.9 ug/L		1.0	1		10/26/12 15:46	56-23-5	
Chlorobenzene	ND ug/L		1.0	1		10/26/12 15:46	108-90-7	
Chloroethane	ND ug/L		1.0	1		10/26/12 15:46	75-00-3	
Chloroform	ND ug/L		1.0	1		10/26/12 15:46	67-66-3	
Chloromethane	ND ug/L		1.0	1		10/26/12 15:46	74-87-3	
2-Chlorotoluene	ND ug/L		1.0	1		10/26/12 15:46	95-49-8	
4-Chlorotoluene	ND ug/L		1.0	1		10/26/12 15:46	106-43-4	
1,2-Dibromo-3-chloropropane	ND ug/L		2.5	1		10/26/12 15:46	96-12-8	
Dibromochloromethane	ND ug/L		1.0	1		10/26/12 15:46	124-48-1	
1,2-Dibromoethane (EDB)	ND ug/L		1.0	1		10/26/12 15:46	106-93-4	
Dibromomethane	ND ug/L		1.0	1		10/26/12 15:46	74-95-3	
1,2-Dichlorobenzene	ND ug/L		1.0	1		10/26/12 15:46	95-50-1	
1,3-Dichlorobenzene	ND ug/L		1.0	1		10/26/12 15:46	541-73-1	
1,4-Dichlorobenzene	ND ug/L		1.0	1		10/26/12 15:46	106-46-7	
Dichlorodifluoromethane	ND ug/L		1.0	1		10/26/12 15:46	75-71-8	
1,1-Dichloroethane	ND ug/L		1.0	1		10/26/12 15:46	75-34-3	
1,2-Dichloroethane	ND ug/L		1.0	1		10/26/12 15:46	107-06-2	
1,2-Dichloroethene (Total)	ND ug/L		1.0	1		10/26/12 15:46	540-59-0	
1,1-Dichloroethene	ND ug/L		1.0	1		10/26/12 15:46	75-35-4	
cis-1,2-Dichloroethene	ND ug/L		1.0	1		10/26/12 15:46	156-59-2	
trans-1,2-Dichloroethene	ND ug/L		1.0	1		10/26/12 15:46	156-60-5	
1,2-Dichloropropane	ND ug/L		1.0	1		10/26/12 15:46	78-87-5	
1,3-Dichloropropane	ND ug/L		1.0	1		10/26/12 15:46	142-28-9	
2,2-Dichloropropane	ND ug/L		1.0	1		10/26/12 15:46	594-20-7	
1,1-Dichloropropene	ND ug/L		1.0	1		10/26/12 15:46	563-58-6	
cis-1,3-Dichloropropene	ND ug/L		1.0	1		10/26/12 15:46	10061-01-5	
trans-1,3-Dichloropropene	ND ug/L		1.0	1		10/26/12 15:46	10061-02-6	
Ethylbenzene	ND ug/L		1.0	1		10/26/12 15:46	100-41-4	
Hexachloro-1,3-butadiene	ND ug/L		1.0	1		10/26/12 15:46	87-68-3	
2-Hexanone	ND ug/L		10.0	1		10/26/12 15:46	591-78-6	
Isopropylbenzene (Cumene)	ND ug/L		1.0	1		10/26/12 15:46	98-82-8	
p-Isopropyltoluene	ND ug/L		1.0	1		10/26/12 15:46	99-87-6	

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ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: CNPURGE-W-10223		Lab ID: 60131732003	Collected: 10/22/12 08:20	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 5030B/8260						
Methylene chloride	ND ug/L		1.0	1		10/26/12 15:46	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND ug/L		10.0	1		10/26/12 15:46	108-10-1	
Methyl-tert-butyl ether	ND ug/L		1.0	1		10/26/12 15:46	1634-04-4	
Naphthalene	ND ug/L		10.0	1		10/26/12 15:46	91-20-3	
n-Propylbenzene	ND ug/L		1.0	1		10/26/12 15:46	103-65-1	
Styrene	ND ug/L		1.0	1		10/26/12 15:46	100-42-5	
1,1,1,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 15:46	630-20-6	
1,1,2,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 15:46	79-34-5	
Tetrachloroethene	ND ug/L		1.0	1		10/26/12 15:46	127-18-4	
Toluene	ND ug/L		1.0	1		10/26/12 15:46	108-88-3	
1,2,3-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 15:46	87-61-6	
1,2,4-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 15:46	120-82-1	
1,1,1-Trichloroethane	ND ug/L		1.0	1		10/26/12 15:46	71-55-6	
1,1,2-Trichloroethane	ND ug/L		1.0	1		10/26/12 15:46	79-00-5	
Trichloroethene	ND ug/L		1.0	1		10/26/12 15:46	79-01-6	
Trichlorofluoromethane	ND ug/L		1.0	1		10/26/12 15:46	75-69-4	
1,2,3-Trichloropropane	ND ug/L		2.5	1		10/26/12 15:46	96-18-4	
1,2,4-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 15:46	95-63-6	
1,3,5-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 15:46	108-67-8	
Vinyl chloride	ND ug/L		1.0	1		10/26/12 15:46	75-01-4	
Xylene (Total)	ND ug/L		3.0	1		10/26/12 15:46	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	101 %		80-120	1		10/26/12 15:46	460-00-4	
Dibromofluoromethane (S)	95 %		80-120	1		10/26/12 15:46	1868-53-7	
1,2-Dichloroethane-d4 (S)	108 %		80-120	1		10/26/12 15:46	17060-07-0	
Toluene-d8 (S)	93 %		80-120	1		10/26/12 15:46	2037-26-5	
Preservation pH	7.0		0.10	1		10/26/12 15:46		
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2						
Nitrogen, Nitrate	3.2 mg/L		0.10	1		10/23/12 17:49		

ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: EVPURGE-W-10224		Lab ID: 60131732004	Collected: 10/22/12 08:30	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
504 GCS EDB and DBCP		Analytical Method: EPA 504.1 Preparation Method: EPA 504.1						
1,2-Dibromoethane (EDB)	ND	ug/L	0.030	1	10/25/12 00:00	10/25/12 20:45	106-93-4	
8260 MSV		Analytical Method: EPA 5030B/8260						
Acetone	ND	ug/L	10.0	1		10/26/12 16:02	67-64-1	
Benzene	ND	ug/L	1.0	1		10/26/12 16:02	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		10/26/12 16:02	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		10/26/12 16:02	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		10/26/12 16:02	75-27-4	
Bromoform	ND	ug/L	1.0	1		10/26/12 16:02	75-25-2	
Bromomethane	ND	ug/L	5.0	1		10/26/12 16:02	74-83-9	
2-Butanone (MEK)	ND	ug/L	10.0	1		10/26/12 16:02	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:02	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:02	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:02	98-06-6	
Carbon disulfide	ND	ug/L	5.0	1		10/26/12 16:02	75-15-0	
Carbon tetrachloride	1.9	ug/L	1.0	1		10/26/12 16:02	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		10/26/12 16:02	108-90-7	
Chloroethane	ND	ug/L	1.0	1		10/26/12 16:02	75-00-3	
Chloroform	1.0	ug/L	1.0	1		10/26/12 16:02	67-66-3	
Chloromethane	ND	ug/L	1.0	1		10/26/12 16:02	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 16:02	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 16:02	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.5	1		10/26/12 16:02	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		10/26/12 16:02	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		10/26/12 16:02	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		10/26/12 16:02	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:02	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:02	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:02	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		10/26/12 16:02	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		10/26/12 16:02	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		10/26/12 16:02	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/L	1.0	1		10/26/12 16:02	540-59-0	
1,1-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:02	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:02	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:02	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:02	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:02	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:02	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:02	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:02	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:02	10061-02-6	
Ethylbenzene	ND	ug/L	1.0	1		10/26/12 16:02	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		10/26/12 16:02	87-68-3	
2-Hexanone	ND	ug/L	10.0	1		10/26/12 16:02	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		10/26/12 16:02	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		10/26/12 16:02	99-87-6	

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ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: EVPURGE-W-10224		Lab ID: 60131732004	Collected: 10/22/12 08:30	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 5030B/8260						
Methylene chloride	ND ug/L		1.0	1		10/26/12 16:02	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND ug/L		10.0	1		10/26/12 16:02	108-10-1	
Methyl-tert-butyl ether	ND ug/L		1.0	1		10/26/12 16:02	1634-04-4	
Naphthalene	ND ug/L		10.0	1		10/26/12 16:02	91-20-3	
n-Propylbenzene	ND ug/L		1.0	1		10/26/12 16:02	103-65-1	
Styrene	ND ug/L		1.0	1		10/26/12 16:02	100-42-5	
1,1,1,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 16:02	630-20-6	
1,1,2,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 16:02	79-34-5	
Tetrachloroethene	ND ug/L		1.0	1		10/26/12 16:02	127-18-4	
Toluene	ND ug/L		1.0	1		10/26/12 16:02	108-88-3	
1,2,3-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 16:02	87-61-6	
1,2,4-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 16:02	120-82-1	
1,1,1-Trichloroethane	ND ug/L		1.0	1		10/26/12 16:02	71-55-6	
1,1,2-Trichloroethane	ND ug/L		1.0	1		10/26/12 16:02	79-00-5	
Trichloroethene	ND ug/L		1.0	1		10/26/12 16:02	79-01-6	
Trichlorofluoromethane	ND ug/L		1.0	1		10/26/12 16:02	75-69-4	
1,2,3-Trichloropropane	ND ug/L		2.5	1		10/26/12 16:02	96-18-4	
1,2,4-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 16:02	95-63-6	
1,3,5-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 16:02	108-67-8	
Vinyl chloride	ND ug/L		1.0	1		10/26/12 16:02	75-01-4	
Xylene (Total)	ND ug/L		3.0	1		10/26/12 16:02	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	102 %		80-120	1		10/26/12 16:02	460-00-4	
Dibromofluoromethane (S)	97 %		80-120	1		10/26/12 16:02	1868-53-7	
1,2-Dichloroethane-d4 (S)	107 %		80-120	1		10/26/12 16:02	17060-07-0	
Toluene-d8 (S)	91 %		80-120	1		10/26/12 16:02	2037-26-5	
Preservation pH	7.0		0.10	1		10/26/12 16:02		
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2						
Nitrogen, Nitrate	4.0 mg/L		0.10	1		10/23/12 17:50		

ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: MRPURGE-W-10225		Lab ID: 60131732005	Collected: 10/22/12 08:40	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
504 GCS EDB and DBCP		Analytical Method: EPA 504.1 Preparation Method: EPA 504.1						
1,2-Dibromoethane (EDB)	ND	ug/L	0.030	1	10/25/12 00:00	10/25/12 20:56	106-93-4	
8260 MSV		Analytical Method: EPA 5030B/8260						
Acetone	ND	ug/L	10.0	1		10/26/12 16:17	67-64-1	
Benzene	ND	ug/L	1.0	1		10/26/12 16:17	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		10/26/12 16:17	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		10/26/12 16:17	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		10/26/12 16:17	75-27-4	
Bromoform	ND	ug/L	1.0	1		10/26/12 16:17	75-25-2	
Bromomethane	ND	ug/L	5.0	1		10/26/12 16:17	74-83-9	
2-Butanone (MEK)	ND	ug/L	10.0	1		10/26/12 16:17	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:17	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:17	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:17	98-06-6	
Carbon disulfide	ND	ug/L	5.0	1		10/26/12 16:17	75-15-0	
Carbon tetrachloride	ND	ug/L	1.0	1		10/26/12 16:17	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		10/26/12 16:17	108-90-7	
Chloroethane	ND	ug/L	1.0	1		10/26/12 16:17	75-00-3	
Chloroform	ND	ug/L	1.0	1		10/26/12 16:17	67-66-3	
Chloromethane	ND	ug/L	1.0	1		10/26/12 16:17	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 16:17	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 16:17	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.5	1		10/26/12 16:17	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		10/26/12 16:17	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		10/26/12 16:17	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		10/26/12 16:17	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:17	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:17	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:17	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		10/26/12 16:17	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		10/26/12 16:17	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		10/26/12 16:17	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/L	1.0	1		10/26/12 16:17	540-59-0	
1,1-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:17	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:17	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:17	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:17	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:17	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:17	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:17	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:17	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:17	10061-02-6	
Ethylbenzene	ND	ug/L	1.0	1		10/26/12 16:17	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		10/26/12 16:17	87-68-3	
2-Hexanone	ND	ug/L	10.0	1		10/26/12 16:17	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		10/26/12 16:17	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		10/26/12 16:17	99-87-6	

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ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: MRPURGE-W-10225		Lab ID: 60131732005	Collected: 10/22/12 08:40	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 5030B/8260						
Methylene chloride	ND ug/L		1.0	1		10/26/12 16:17	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND ug/L		10.0	1		10/26/12 16:17	108-10-1	
Methyl-tert-butyl ether	ND ug/L		1.0	1		10/26/12 16:17	1634-04-4	
Naphthalene	ND ug/L		10.0	1		10/26/12 16:17	91-20-3	
n-Propylbenzene	ND ug/L		1.0	1		10/26/12 16:17	103-65-1	
Styrene	ND ug/L		1.0	1		10/26/12 16:17	100-42-5	
1,1,1,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 16:17	630-20-6	
1,1,2,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 16:17	79-34-5	
Tetrachloroethene	ND ug/L		1.0	1		10/26/12 16:17	127-18-4	
Toluene	ND ug/L		1.0	1		10/26/12 16:17	108-88-3	
1,2,3-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 16:17	87-61-6	
1,2,4-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 16:17	120-82-1	
1,1,1-Trichloroethane	ND ug/L		1.0	1		10/26/12 16:17	71-55-6	
1,1,2-Trichloroethane	ND ug/L		1.0	1		10/26/12 16:17	79-00-5	
Trichloroethene	ND ug/L		1.0	1		10/26/12 16:17	79-01-6	
Trichlorofluoromethane	ND ug/L		1.0	1		10/26/12 16:17	75-69-4	
1,2,3-Trichloropropane	ND ug/L		2.5	1		10/26/12 16:17	96-18-4	
1,2,4-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 16:17	95-63-6	
1,3,5-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 16:17	108-67-8	
Vinyl chloride	ND ug/L		1.0	1		10/26/12 16:17	75-01-4	
Xylene (Total)	ND ug/L		3.0	1		10/26/12 16:17	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	100 %		80-120	1		10/26/12 16:17	460-00-4	
Dibromofluoromethane (S)	93 %		80-120	1		10/26/12 16:17	1868-53-7	
1,2-Dichloroethane-d4 (S)	103 %		80-120	1		10/26/12 16:17	17060-07-0	
Toluene-d8 (S)	92 %		80-120	1		10/26/12 16:17	2037-26-5	
Preservation pH	7.0		0.10	1		10/26/12 16:17		
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2						
Nitrogen, Nitrate	ND mg/L		0.10	1		10/23/12 17:51		

ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: PHPURGE-W-10226		Lab ID: 60131732006	Collected: 10/22/12 08:50	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
504 GCS EDB and DBCP		Analytical Method: EPA 504.1 Preparation Method: EPA 504.1						
1,2-Dibromoethane (EDB)	ND	ug/L	0.029	1	10/25/12 00:00	10/25/12 21:07	106-93-4	
8260 MSV		Analytical Method: EPA 5030B/8260						
Acetone	ND	ug/L	10.0	1		10/26/12 16:32	67-64-1	
Benzene	ND	ug/L	1.0	1		10/26/12 16:32	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		10/26/12 16:32	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		10/26/12 16:32	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		10/26/12 16:32	75-27-4	
Bromoform	ND	ug/L	1.0	1		10/26/12 16:32	75-25-2	
Bromomethane	ND	ug/L	5.0	1		10/26/12 16:32	74-83-9	
2-Butanone (MEK)	ND	ug/L	10.0	1		10/26/12 16:32	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:32	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:32	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:32	98-06-6	
Carbon disulfide	ND	ug/L	5.0	1		10/26/12 16:32	75-15-0	
Carbon tetrachloride	1.2	ug/L	1.0	1		10/26/12 16:32	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		10/26/12 16:32	108-90-7	
Chloroethane	ND	ug/L	1.0	1		10/26/12 16:32	75-00-3	
Chloroform	ND	ug/L	1.0	1		10/26/12 16:32	67-66-3	
Chloromethane	ND	ug/L	1.0	1		10/26/12 16:32	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 16:32	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 16:32	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.5	1		10/26/12 16:32	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		10/26/12 16:32	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		10/26/12 16:32	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		10/26/12 16:32	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:32	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:32	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:32	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		10/26/12 16:32	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		10/26/12 16:32	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		10/26/12 16:32	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/L	1.0	1		10/26/12 16:32	540-59-0	
1,1-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:32	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:32	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:32	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:32	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:32	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:32	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:32	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:32	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:32	10061-02-6	
Ethylbenzene	ND	ug/L	1.0	1		10/26/12 16:32	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		10/26/12 16:32	87-68-3	
2-Hexanone	ND	ug/L	10.0	1		10/26/12 16:32	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		10/26/12 16:32	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		10/26/12 16:32	99-87-6	

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ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: PHPURGE-W-10226		Lab ID: 60131732006	Collected: 10/22/12 08:50	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 5030B/8260						
Methylene chloride	ND ug/L		1.0	1		10/26/12 16:32	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND ug/L		10.0	1		10/26/12 16:32	108-10-1	
Methyl-tert-butyl ether	ND ug/L		1.0	1		10/26/12 16:32	1634-04-4	
Naphthalene	ND ug/L		10.0	1		10/26/12 16:32	91-20-3	
n-Propylbenzene	ND ug/L		1.0	1		10/26/12 16:32	103-65-1	
Styrene	ND ug/L		1.0	1		10/26/12 16:32	100-42-5	
1,1,1,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 16:32	630-20-6	
1,1,2,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 16:32	79-34-5	
Tetrachloroethene	ND ug/L		1.0	1		10/26/12 16:32	127-18-4	
Toluene	ND ug/L		1.0	1		10/26/12 16:32	108-88-3	
1,2,3-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 16:32	87-61-6	
1,2,4-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 16:32	120-82-1	
1,1,1-Trichloroethane	ND ug/L		1.0	1		10/26/12 16:32	71-55-6	
1,1,2-Trichloroethane	ND ug/L		1.0	1		10/26/12 16:32	79-00-5	
Trichloroethene	ND ug/L		1.0	1		10/26/12 16:32	79-01-6	
Trichlorofluoromethane	ND ug/L		1.0	1		10/26/12 16:32	75-69-4	
1,2,3-Trichloropropane	ND ug/L		2.5	1		10/26/12 16:32	96-18-4	
1,2,4-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 16:32	95-63-6	
1,3,5-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 16:32	108-67-8	
Vinyl chloride	ND ug/L		1.0	1		10/26/12 16:32	75-01-4	
Xylene (Total)	ND ug/L		3.0	1		10/26/12 16:32	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	99 %		80-120	1		10/26/12 16:32	460-00-4	
Dibromofluoromethane (S)	98 %		80-120	1		10/26/12 16:32	1868-53-7	
1,2-Dichloroethane-d4 (S)	107 %		80-120	1		10/26/12 16:32	17060-07-0	
Toluene-d8 (S)	95 %		80-120	1		10/26/12 16:32	2037-26-5	
Preservation pH	7.0		0.10	1		10/26/12 16:32		
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2						
Nitrogen, Nitrate	17.2 mg/L		1.0	10		10/23/12 18:10		

ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: SVPURGE-W-10227		Lab ID: 60131732007	Collected: 10/22/12 09:00	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
504 GCS EDB and DBCP		Analytical Method: EPA 504.1 Preparation Method: EPA 504.1						
1,2-Dibromoethane (EDB)	ND	ug/L	0.029	1	10/25/12 00:00	10/25/12 21:17	106-93-4	
8260 MSV		Analytical Method: EPA 5030B/8260						
Acetone	ND	ug/L	10.0	1		10/26/12 16:47	67-64-1	
Benzene	ND	ug/L	1.0	1		10/26/12 16:47	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		10/26/12 16:47	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		10/26/12 16:47	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		10/26/12 16:47	75-27-4	
Bromoform	ND	ug/L	1.0	1		10/26/12 16:47	75-25-2	
Bromomethane	ND	ug/L	5.0	1		10/26/12 16:47	74-83-9	
2-Butanone (MEK)	ND	ug/L	10.0	1		10/26/12 16:47	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:47	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:47	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		10/26/12 16:47	98-06-6	
Carbon disulfide	ND	ug/L	5.0	1		10/26/12 16:47	75-15-0	
Carbon tetrachloride	ND	ug/L	1.0	1		10/26/12 16:47	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		10/26/12 16:47	108-90-7	
Chloroethane	ND	ug/L	1.0	1		10/26/12 16:47	75-00-3	
Chloroform	1.1	ug/L	1.0	1		10/26/12 16:47	67-66-3	
Chloromethane	ND	ug/L	1.0	1		10/26/12 16:47	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 16:47	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		10/26/12 16:47	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.5	1		10/26/12 16:47	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		10/26/12 16:47	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		10/26/12 16:47	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		10/26/12 16:47	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:47	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:47	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		10/26/12 16:47	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		10/26/12 16:47	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		10/26/12 16:47	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		10/26/12 16:47	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/L	1.0	1		10/26/12 16:47	540-59-0	
1,1-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:47	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:47	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		10/26/12 16:47	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:47	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:47	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		10/26/12 16:47	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:47	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:47	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		10/26/12 16:47	10061-02-6	
Ethylbenzene	ND	ug/L	1.0	1		10/26/12 16:47	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		10/26/12 16:47	87-68-3	
2-Hexanone	ND	ug/L	10.0	1		10/26/12 16:47	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		10/26/12 16:47	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		10/26/12 16:47	99-87-6	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: KS/MO Waste Water

Pace Project No.: 60131732

Sample: SVPURGE-W-10227		Lab ID: 60131732007	Collected: 10/22/12 09:00	Received: 10/23/12 08:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 5030B/8260						
Methylene chloride	ND ug/L		1.0	1		10/26/12 16:47	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND ug/L		10.0	1		10/26/12 16:47	108-10-1	
Methyl-tert-butyl ether	ND ug/L		1.0	1		10/26/12 16:47	1634-04-4	
Naphthalene	ND ug/L		10.0	1		10/26/12 16:47	91-20-3	
n-Propylbenzene	ND ug/L		1.0	1		10/26/12 16:47	103-65-1	
Styrene	ND ug/L		1.0	1		10/26/12 16:47	100-42-5	
1,1,1,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 16:47	630-20-6	
1,1,2,2-Tetrachloroethane	ND ug/L		1.0	1		10/26/12 16:47	79-34-5	
Tetrachloroethene	ND ug/L		1.0	1		10/26/12 16:47	127-18-4	
Toluene	ND ug/L		1.0	1		10/26/12 16:47	108-88-3	
1,2,3-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 16:47	87-61-6	
1,2,4-Trichlorobenzene	ND ug/L		1.0	1		10/26/12 16:47	120-82-1	
1,1,1-Trichloroethane	ND ug/L		1.0	1		10/26/12 16:47	71-55-6	
1,1,2-Trichloroethane	ND ug/L		1.0	1		10/26/12 16:47	79-00-5	
Trichloroethene	ND ug/L		1.0	1		10/26/12 16:47	79-01-6	
Trichlorofluoromethane	ND ug/L		1.0	1		10/26/12 16:47	75-69-4	
1,2,3-Trichloropropane	ND ug/L		2.5	1		10/26/12 16:47	96-18-4	
1,2,4-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 16:47	95-63-6	
1,3,5-Trimethylbenzene	ND ug/L		1.0	1		10/26/12 16:47	108-67-8	
Vinyl chloride	ND ug/L		1.0	1		10/26/12 16:47	75-01-4	
Xylene (Total)	ND ug/L		3.0	1		10/26/12 16:47	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	97 %		80-120	1		10/26/12 16:47	460-00-4	
Dibromofluoromethane (S)	98 %		80-120	1		10/26/12 16:47	1868-53-7	
1,2-Dichloroethane-d4 (S)	102 %		80-120	1		10/26/12 16:47	17060-07-0	
Toluene-d8 (S)	91 %		80-120	1		10/26/12 16:47	2037-26-5	
Preservation pH	7.0		0.10	1		10/26/12 16:47		
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2						
Nitrogen, Nitrate	0.92 mg/L		0.10	1		10/23/12 17:54		

QUALITY CONTROL DATA

Project: KS/MO Waste Water

Pace Project No.: 60131732

QC Batch: MSV/49594 Analysis Method: EPA 5030B/8260
QC Batch Method: EPA 5030B/8260 Analysis Description: 8260 MSV Water 7 day
Associated Lab Samples: 60131732001, 60131732002, 60131732003, 60131732004, 60131732005, 60131732006, 60131732007

METHOD BLANK: 1087677 Matrix: Water
Associated Lab Samples: 60131732001, 60131732002, 60131732003, 60131732004, 60131732005, 60131732006, 60131732007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	10/26/12 12:30	
1,1,1-Trichloroethane	ug/L	ND	1.0	10/26/12 12:30	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	10/26/12 12:30	
1,1,2-Trichloroethane	ug/L	ND	1.0	10/26/12 12:30	
1,1-Dichloroethane	ug/L	ND	1.0	10/26/12 12:30	
1,1-Dichloroethene	ug/L	ND	1.0	10/26/12 12:30	
1,1-Dichloropropene	ug/L	ND	1.0	10/26/12 12:30	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	10/26/12 12:30	
1,2,3-Trichloropropane	ug/L	ND	2.5	10/26/12 12:30	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	10/26/12 12:30	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	10/26/12 12:30	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.5	10/26/12 12:30	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	10/26/12 12:30	
1,2-Dichlorobenzene	ug/L	ND	1.0	10/26/12 12:30	
1,2-Dichloroethane	ug/L	ND	1.0	10/26/12 12:30	
1,2-Dichloroethene (Total)	ug/L	ND	1.0	10/26/12 12:30	
1,2-Dichloropropane	ug/L	ND	1.0	10/26/12 12:30	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	10/26/12 12:30	
1,3-Dichlorobenzene	ug/L	ND	1.0	10/26/12 12:30	
1,3-Dichloropropane	ug/L	ND	1.0	10/26/12 12:30	
1,4-Dichlorobenzene	ug/L	ND	1.0	10/26/12 12:30	
2,2-Dichloropropane	ug/L	ND	1.0	10/26/12 12:30	
2-Butanone (MEK)	ug/L	ND	10.0	10/26/12 12:30	
2-Chlorotoluene	ug/L	ND	1.0	10/26/12 12:30	
2-Hexanone	ug/L	ND	10.0	10/26/12 12:30	
4-Chlorotoluene	ug/L	ND	1.0	10/26/12 12:30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	10.0	10/26/12 12:30	
Acetone	ug/L	ND	10.0	10/26/12 12:30	
Benzene	ug/L	ND	1.0	10/26/12 12:30	
Bromobenzene	ug/L	ND	1.0	10/26/12 12:30	
Bromochloromethane	ug/L	ND	1.0	10/26/12 12:30	
Bromodichloromethane	ug/L	ND	1.0	10/26/12 12:30	
Bromoform	ug/L	ND	1.0	10/26/12 12:30	
Bromomethane	ug/L	ND	5.0	10/26/12 12:30	
Carbon disulfide	ug/L	ND	5.0	10/26/12 12:30	
Carbon tetrachloride	ug/L	ND	1.0	10/26/12 12:30	
Chlorobenzene	ug/L	ND	1.0	10/26/12 12:30	
Chloroethane	ug/L	ND	1.0	10/26/12 12:30	
Chloroform	ug/L	ND	1.0	10/26/12 12:30	
Chloromethane	ug/L	ND	1.0	10/26/12 12:30	
cis-1,2-Dichloroethene	ug/L	ND	1.0	10/26/12 12:30	
cis-1,3-Dichloropropene	ug/L	ND	1.0	10/26/12 12:30	
Dibromochloromethane	ug/L	ND	1.0	10/26/12 12:30	

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QUALITY CONTROL DATA

Project: KS/MO Waste Water

Pace Project No.: 60131732

METHOD BLANK: 1087677

Matrix: Water

Associated Lab Samples: 60131732001, 60131732002, 60131732003, 60131732004, 60131732005, 60131732006, 60131732007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromomethane	ug/L	ND	1.0	10/26/12 12:30	
Dichlorodifluoromethane	ug/L	ND	1.0	10/26/12 12:30	
Ethylbenzene	ug/L	ND	1.0	10/26/12 12:30	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	10/26/12 12:30	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	10/26/12 12:30	
Methyl-tert-butyl ether	ug/L	ND	1.0	10/26/12 12:30	
Methylene chloride	ug/L	ND	1.0	10/26/12 12:30	
n-Butylbenzene	ug/L	ND	1.0	10/26/12 12:30	
n-Propylbenzene	ug/L	ND	1.0	10/26/12 12:30	
Naphthalene	ug/L	ND	10.0	10/26/12 12:30	
p-Isopropyltoluene	ug/L	ND	1.0	10/26/12 12:30	
sec-Butylbenzene	ug/L	ND	1.0	10/26/12 12:30	
Styrene	ug/L	ND	1.0	10/26/12 12:30	
tert-Butylbenzene	ug/L	ND	1.0	10/26/12 12:30	
Tetrachloroethene	ug/L	ND	1.0	10/26/12 12:30	
Toluene	ug/L	ND	1.0	10/26/12 12:30	
trans-1,2-Dichloroethene	ug/L	ND	1.0	10/26/12 12:30	
trans-1,3-Dichloropropene	ug/L	ND	1.0	10/26/12 12:30	
Trichloroethene	ug/L	ND	1.0	10/26/12 12:30	
Trichlorofluoromethane	ug/L	ND	1.0	10/26/12 12:30	
Vinyl chloride	ug/L	ND	1.0	10/26/12 12:30	
Xylene (Total)	ug/L	ND	3.0	10/26/12 12:30	
1,2-Dichloroethane-d4 (S)	%	108	80-120	10/26/12 12:30	
4-Bromofluorobenzene (S)	%	103	80-120	10/26/12 12:30	
Dibromofluoromethane (S)	%	98	80-120	10/26/12 12:30	
Toluene-d8 (S)	%	99	80-120	10/26/12 12:30	

LABORATORY CONTROL SAMPLE: 1087678

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	20.8	104	79-121	
1,1,1-Trichloroethane	ug/L	20	19.7	98	76-120	
1,1,2,2-Tetrachloroethane	ug/L	20	22.9	114	71-121	
1,1,2-Trichloroethane	ug/L	20	22.6	113	78-120	
1,1-Dichloroethane	ug/L	20	19.3	97	74-120	
1,1-Dichloroethene	ug/L	20	21.5	108	68-120	
1,1-Dichloropropene	ug/L	20	20.6	103	78-120	
1,2,3-Trichlorobenzene	ug/L	20	19.8	99	70-129	
1,2,3-Trichloropropane	ug/L	20	22.3	112	74-121	
1,2,4-Trichlorobenzene	ug/L	20	19.9	100	76-123	
1,2,4-Trimethylbenzene	ug/L	20	19.8	99	76-121	
1,2-Dibromo-3-chloropropane	ug/L	20	19.7	99	65-124	
1,2-Dibromoethane (EDB)	ug/L	20	22.5	113	76-125	
1,2-Dichlorobenzene	ug/L	20	20.5	102	80-120	
1,2-Dichloroethane	ug/L	20	21.2	106	72-123	

QUALITY CONTROL DATA

Project: KS/MO Waste Water

Pace Project No.: 60131732

LABORATORY CONTROL SAMPLE: 1087678

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethene (Total)	ug/L	40	39.5	99	78-120	
1,2-Dichloropropane	ug/L	20	21.5	107	78-120	
1,3,5-Trimethylbenzene	ug/L	20	20.0	100	75-120	
1,3-Dichlorobenzene	ug/L	20	19.5	98	79-120	
1,3-Dichloropropane	ug/L	20	22.5	113	75-120	
1,4-Dichlorobenzene	ug/L	20	19.5	98	80-120	
2,2-Dichloropropane	ug/L	20	18.7	94	54-132	
2-Butanone (MEK)	ug/L	100	118	118	40-160	
2-Chlorotoluene	ug/L	20	19.6	98	78-120	
2-Hexanone	ug/L	100	117	117	40-160	
4-Chlorotoluene	ug/L	20	20.0	100	79-120	
4-Methyl-2-pentanone (MIBK)	ug/L	100	112	112	65-126	
Acetone	ug/L	100	116	116	40-160	
Benzene	ug/L	20	19.9	100	74-123	
Bromobenzene	ug/L	20	20.6	103	79-120	
Bromochloromethane	ug/L	20	21.3	107	75-120	
Bromodichloromethane	ug/L	20	19.0	95	74-120	
Bromoform	ug/L	20	19.2	96	70-123	
Bromomethane	ug/L	20	20.9	104	40-158	
Carbon disulfide	ug/L	20	17.5	88	67-135	
Carbon tetrachloride	ug/L	20	19.1	95	74-126	
Chlorobenzene	ug/L	20	19.7	99	80-120	
Chloroethane	ug/L	20	19.4	97	60-144	
Chloroform	ug/L	20	19.8	99	77-120	
Chloromethane	ug/L	20	15.7	78	40-142	
cis-1,2-Dichloroethene	ug/L	20	19.5	98	70-120	
cis-1,3-Dichloropropene	ug/L	20	20.2	101	73-121	
Dibromochloromethane	ug/L	20	20.9	104	77-122	
Dibromomethane	ug/L	20	21.3	106	76-120	
Dichlorodifluoromethane	ug/L	20	10.1	51	40-160	
Ethylbenzene	ug/L	20	19.4	97	76-123	
Hexachloro-1,3-butadiene	ug/L	20	16.2	81	72-124	
Isopropylbenzene (Cumene)	ug/L	20	20.5	103	80-126	
Methyl-tert-butyl ether	ug/L	20	21.4	107	67-125	
Methylene chloride	ug/L	20	21.1	105	72-127	
n-Butylbenzene	ug/L	20	18.5	92	76-125	
n-Propylbenzene	ug/L	20	18.1	91	77-120	
Naphthalene	ug/L	20	20.4	102	63-128	
p-Isopropyltoluene	ug/L	20	18.8	94	77-121	
sec-Butylbenzene	ug/L	20	17.6	88	77-122	
Styrene	ug/L	20	20.7	104	79-120	
tert-Butylbenzene	ug/L	20	20.0	100	75-124	
Tetrachloroethene	ug/L	20	19.7	98	78-121	
Toluene	ug/L	20	18.3	91	75-123	
trans-1,2-Dichloroethene	ug/L	20	20.0	100	80-129	
trans-1,3-Dichloropropene	ug/L	20	21.8	109	77-122	
Trichloroethene	ug/L	20	19.3	97	74-120	
Trichlorofluoromethane	ug/L	20	18.8	94	69-122	

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QUALITY CONTROL DATA

Project: KS/MO Waste Water

Pace Project No.: 60131732

LABORATORY CONTROL SAMPLE: 1087678

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Vinyl chloride	ug/L	20	19.0	95	50-140	
Xylene (Total)	ug/L	60	59.9	100	76-123	
1,2-Dichloroethane-d4 (S)	%			111	80-120	
4-Bromofluorobenzene (S)	%			101	80-120	
Dibromofluoromethane (S)	%			95	80-120	
Toluene-d8 (S)	%			88	80-120	

QUALITY CONTROL DATA

Project: KS/MO Waste Water

Pace Project No.: 60131732

QC Batch:	OEXT/35700	Analysis Method:	EPA 504.1
QC Batch Method:	EPA 504.1	Analysis Description:	GCS 504 EDB DBCP
Associated Lab Samples:	60131732001, 60131732002, 60131732003, 60131732004, 60131732005, 60131732006, 60131732007		

METHOD BLANK:	1086553	Matrix:	Water
Associated Lab Samples:	60131732001, 60131732002, 60131732003, 60131732004, 60131732005, 60131732006, 60131732007		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.030	10/25/12 16:46	

LABORATORY CONTROL SAMPLE & LCSD:		1086554	1086555							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.25	0.22	0.23	89	91	70-130	3	20	

QUALITY CONTROL DATA

Project: KS/MO Waste Water

Pace Project No.: 60131732

QC Batch:	WETA/22168	Analysis Method:	EPA 353.2
QC Batch Method:	EPA 353.2	Analysis Description:	353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples:	60131732001, 60131732002, 60131732003, 60131732004, 60131732005, 60131732006, 60131732007		

METHOD BLANK:	1085538	Matrix:	Water
Associated Lab Samples:	60131732001, 60131732002, 60131732003, 60131732004, 60131732005, 60131732006, 60131732007		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	10/23/12 17:45	

LABORATORY CONTROL SAMPLE: 1085539						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1.6	1.7	105	90-110	

MATRIX SPIKE SAMPLE: 1085540							
Parameter	Units	60131719001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	ND	1.6	1.8	112	90-110	M1

SAMPLE DUPLICATE: 1085541						
Parameter	Units	60131719002 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	10.0	9.8	2	15	

QUALIFIERS

Project: KS/MO Waste Water

Pace Project No.: 60131732

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: MSV/49594

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: KS/MO Waste Water

Pace Project No.: 60131732

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60131732001	AGPURGE-W-10221	EPA 504.1	OEXT/35700	EPA 504.1	GCSV/13420
60131732002	BAPURGE-W-10222	EPA 504.1	OEXT/35700	EPA 504.1	GCSV/13420
60131732003	CNPURGE-W-10223	EPA 504.1	OEXT/35700	EPA 504.1	GCSV/13420
60131732004	EVPURGE-W-10224	EPA 504.1	OEXT/35700	EPA 504.1	GCSV/13420
60131732005	MRPURGE-W-10225	EPA 504.1	OEXT/35700	EPA 504.1	GCSV/13420
60131732006	PHPURGE-W-10226	EPA 504.1	OEXT/35700	EPA 504.1	GCSV/13420
60131732007	SVPURGE-W-10227	EPA 504.1	OEXT/35700	EPA 504.1	GCSV/13420
60131732001	AGPURGE-W-10221	EPA 5030B/8260	MSV/49594		
60131732002	BAPURGE-W-10222	EPA 5030B/8260	MSV/49594		
60131732003	CNPURGE-W-10223	EPA 5030B/8260	MSV/49594		
60131732004	EVPURGE-W-10224	EPA 5030B/8260	MSV/49594		
60131732005	MRPURGE-W-10225	EPA 5030B/8260	MSV/49594		
60131732006	PHPURGE-W-10226	EPA 5030B/8260	MSV/49594		
60131732007	SVPURGE-W-10227	EPA 5030B/8260	MSV/49594		
60131732001	AGPURGE-W-10221	EPA 353.2	WETA/22168		
60131732002	BAPURGE-W-10222	EPA 353.2	WETA/22168		
60131732003	CNPURGE-W-10223	EPA 353.2	WETA/22168		
60131732004	EVPURGE-W-10224	EPA 353.2	WETA/22168		
60131732005	MRPURGE-W-10225	EPA 353.2	WETA/22168		
60131732006	PHPURGE-W-10226	EPA 353.2	WETA/22168		
60131732007	SVPURGE-W-10227	EPA 353.2	WETA/22168		



Sample Condition Upon Receipt

WO#: 60131732



60131732

APR 10. 23. 12
TCW
Client Name: TWE Construction

Project #: _____

Optional

Courier: Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Proj Due Date: _____

Tracking #: 8758 2746 3644 Pace Shipping Label Used? Yes ☐ No ☒

Proj Name: _____

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ ZPC / Paper towels

Thermometer Used: T-19 T-194

Type of Ice: Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 1.7

Date and initials of person examining contents: 10/23/12 BA

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <u>N03</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>WT</u>		13.
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Exceptions: <u>VOA</u> , coliform, TOC, O&G, WI-DRO (water), Phenolics	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date

10-23-12

CITY OF SABETHA
805 MAIN
PO BOX 187
SABETHA KS 66534

785-284-2158

Receipt No: 1.003754

Nov 2, 2012

TCW Construction

WASTEWATER FUND-MISC
Purged water
502-00.000-4632
MISCELLANEOUS INCOME

50.00

Total:

50.00

Cash

50.00

Total Applied:

50.00

Change Tendered:

.00

11/02/2012 04:06PM

AGEM 40 N

Supplement 2:

**Sample Documentation from TestAmerica Laboratories, Inc.,
for Groundwater Verification Samples**

ANALYTICAL REPORT

Job Number: 200-10085-1

SDG Number: 200-10085

Job Description: Morrill (200-10085)

Contract Number: 1E-30401

For:

Argonne National Laboratory

9700 South Cass Avenue

Building 203

Office B-149

Argonne, IL 60439

Attention: Mr. Clyde Dennis



Approved for release,
Kirk F Young
Project Manager I
4/3/2012 3:39 PM

Kirk F Young
Project Manager I
kirk.young@testamericainc.com
04/03/2012

The test results in this report relate only to sample(s) as received by the laboratory. These test results were derived under a quality system that adheres to the requirements of NELAC. Pursuant to NELAC, this report may not be produced in full without written approval from the laboratory

TestAmerica Laboratories, Inc.

TestAmerica Burlington 30 Community Drive, Suite 11, South Burlington, VT 05403

Tel (802) 660-1990 Fax (802) 660-1919 www.testamericainc.com



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CASE NARRATIVE

Client: Argonne National Laboratory

Project: Morrill (200-10085)

Report Number: 200-10085-1

Enclosed is the data set for the referenced project work. With the exceptions noted as flags or footnotes, standard analytical protocols were followed in performing the analytical work and the applied control limits were met.

Calculations were performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

Receipt

The samples were received on 03/29/2012. Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Shipping and Receiving section of this submittal. The samples, as received, were not acid preserved. On that basis, the laboratory did provide for the analysis of the samples within seven days of sample collection.

SOM01.2 Volatile Organics (Trace Level Water)

A storage blank was prepared for volatile organics analysis, and stored in association with the storage of the samples. That storage blank, identified as VHBLK01, was carried through the holding period with the samples, and analyzed.

Each of the analyses associated with the sample set exhibited an acceptable internal standard performance. There was an acceptable recovery of each deuterated monitoring compound (DMC) in the analysis of the method blank associated with the analytical work, and in the analysis of the storage blank associated with the sample set. The analysis of the samples in this sample set did meet the technical acceptance criteria specific to DMC recoveries, although not all DMC recoveries were within the control range in each analysis. The technical acceptance criteria does provide for the recovery of up to three DMCs to fall outside of the control range in the analysis of field samples. Matrix spike and matrix spike duplicate analyses were not performed on samples in this sample set. A trace concentrations of carbon disulfide was identified in the analysis of the method blank associated with the analytical work. The concentration of carbon disulfide in that analysis was below the established reporting limit, and the analysis did meet the technical acceptance criteria for a compliant method blank analysis. The analysis of the storage blank associated with the sample set was free of analyte contamination. Present in the method blank and storage blank analyses was a non-target constituent that represents a compound that is related to the DMC formulation. The fact that the presence of this compound is not within the laboratory's control is at issue. The derived results for that compound have been qualified with an "X" qualifier to reflect the source of the contamination.

The responses for each of the target analytes met the relative standard deviation criterion in the initial calibration. The response for each target analyte met the percent difference criterion in the opening/continuing calibration check acquisition. The response for each target analyte met the

50.0 percent difference criterion in the closing calibration check acquisition.

The primary quantitation mass for methylcyclohexane that is specified in the Statement of Work is mass 83. The laboratory did identify a contribution to mass 83 from 1,2-dichloropropane-d₆, one of the deuterated monitoring compounds (DMCs). The laboratory did change the primary quantitation mass assignment to mass 55 for the quantification of methylcyclohexane.

Manual integration was employed in deriving certain of the analytical results. The values that have been derived from manual integration are qualified on the quantitation reports. Extracted ion current profiles for each manual integration are included in the data package, and further documented at the end of this submittal.

DATA REPORTING QUALIFIERS

Client: Argonne National Laboratory

Job Number: 200-10085-1

Sdg Number: 200-10085

Lab Section	Qualifier	Description
GC/MS VOA		
	U	Analyzed for but not detected.
	J	Indicates an Estimated Value for TICs
	J	Indicates an estimated value.
	X	See case narrative notes for explanation of the 'X' flag
	*	Surrogate exceeds the control limit
	B	The analyte was found in an associated blank, as well as in the sample.

FD-160 (12-94)

***TestAmerica Burlington**
INTERNAL CHAIN OF CUSTODY LOG (ICOC)

Project Information:	
Log In #: 200-10085	Method: SOM01.2_Vol_Tr
Client: ARGLAB	LAB IDs: 200-10085-1 THRU 5

Samples associated with this log-in were placed into storage on

3/29/2012	1235
(Date)	(Time ²)

by:

Sample Custodian Signature

Storage Location: VOA FRIDGE B, SHELF 4

Specify storage location (refrigerator, freezer ID or lab location) for original sample containers

Storage Condition: ☒ Refrigeration

☐ Frozen☐ Ambient

Internal Transfer Information

[illegible]

Extract, digestate, or any other prepared sample that is no longer in original sample container

Military Time

INTERNAL CHAIN OF CUSTODY LOG (ICOC)

LAB IDs: 200-10085-6

Sample Custodian Signature

☐ Ambient

Strings

Shipping and Receiving Documents

1 From
Date _____ Sender's FedEx Account Number **060403520**
Sender's Name _____ Phone _____
Company _____
Address _____
City _____ State _____ ZIP _____

2 Your Internal Billing Reference 7-10-167

3 To
Recipient's Name **ELL DUNG** Phone _____
Company _____

Address **30 COMMUNITY DRIVE WATL H**
We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept. Piece Line Room

Address _____
Use this line for the HOLD location address or for correction of your shipping address.

City **SAIGON** State **V** ZIP **75000**

01 ☐ **HOLD Weekday**
FedEx location address
REQUIRED NOT available for
FedEx First Overnight.

31 ☐ **HOLD Saturday**
FedEx location address
REQUIRED NOT available for
FedEx Priority Overnight and
FedEx 2Day services.

4 Express Package Service * To local locations.
NOTE: Service order has changed. Please select carefully.

Packages up to 150 lbs.
For packages over 150 lbs. use the new
FedEx Express Freight Service.

06 ☐ **FedEx First Overnight**
Earliest business morning delivery to most
locations. Packages must be received at the
origin by 10:00 PM. Monday-Friday. Not available
for Saturday or Sunday delivery.

01 ☒ **FedEx Priority Overnight**
Next business morning delivery to most
locations. Packages must be received at the
origin by 8:00 PM. Monday-Friday. Not available
for Saturday or Sunday delivery.

05 ☐ **FedEx Standard Overnight**
Next business morning delivery to most
locations. Packages must be received at the
origin by 10:00 PM. Monday-Friday. Not available
for Saturday or Sunday delivery.

49 ☐ **NEW FedEx 2Day A.M.**
Second business morning delivery to most
locations. Packages must be received at the
origin by 10:00 PM. Monday-Friday. Not available
for Saturday or Sunday delivery.

03 ☐ **FedEx 2Day**
Second business morning delivery to most
locations. Packages must be received at the
origin by 10:00 PM. Monday-Friday. Not available
for Saturday or Sunday delivery.

20 ☐ **FedEx Express Saver**
Third business day delivery to most
locations. Packages must be received at the
origin by 10:00 PM. Monday-Friday. Not available
for Saturday or Sunday delivery.

5 Packaging * Ordered value from \$50.00.

06 ☐ **FedEx Envelope** * **02** ☐ **FedEx Pak** * **03** ☐ **FedEx Box** **04** ☐ **FedEx Tube** **01** ☐ **Other**

6 Special Handling and Delivery Signature Options

03 SATURDAY DELIVERY

☒ **No Signature Required**
No signature required for delivery. Packages must be received at the origin by 10:00 PM. Monday-Friday. Not available for Saturday or Sunday delivery.

10 ☐ **Direct Signature**
Signature required at delivery. Packages must be received at the origin by 10:00 PM. Monday-Friday. Not available for Saturday or Sunday delivery.

34 ☐ **Indirect Signature**
Signature required at delivery. Packages must be received at the origin by 10:00 PM. Monday-Friday. Not available for Saturday or Sunday delivery.

Does this shipment contain dangerous goods?

01 ☐ **No** **04** ☐ **Yes**
If "Yes", specify the hazard class, division, and proper shipping name. If "Yes", specify the hazard class, division, and proper shipping name.

06 ☐ **Dry Ice**
Dry ice must be properly packaged and labeled. Packages must be received at the origin by 10:00 PM. Monday-Friday. Not available for Saturday or Sunday delivery.

☐ **Cargo Aircraft Only**

7 Payment Bill to:

1 ☒ **Sender** **2** ☐ **Recipient** **3** ☐ **Third Party** **4** ☐ **Credit Card** **5** ☐ **Cash Check**

Total Packages **1** Total Weight **3.6** **612**



8757 9218 1360

Login Sample Receipt Checklist

Client: Argonne National Laboratory

Job Number: 200-10085-1

SDG Number: 200-10085

Login Number: 10085

List Source: TestAmerica Burlington

List Number: 1

Creator: Holt, Jamie

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	NO CUSTODY SEAL NUMBERS
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	5.2°C, IR GUN ID 154, CF 0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	Sample volumes were received unpreserved.
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Sample Login Acknowledgement

Job 200-10085-1

Client Job Description: Morrill (200-10085)
Purchase Order #: 1E-30401
Work Order #: 1E-30401
Project Manager: Kirk F Young
Job Due Date: 4/12/2012
Job TAT: 14 Days
Max Deliverable Level: IV

Report To: Argonne National Laboratory
 Jorge Alvarado
 9700 South Cass Avenue
 Building 203
 Office B-149
 Argonne, IL 60439

Bill To: Argonne National Laboratory
 Accounts Payable
 Chief Financial Offices
 9700 S. Cass Ave.
 Building 201
 Argonne, IL 60439

Earliest Deliverable Due: 4/12/2012

Login 200-10085

Sample Receipt: 3/29/2012 10:30:00 AM
Method of Delivery: FedEx Priority Overnight

Number of Coolers: 1
Cooler Temperature(s) (C°): 5.2;

Lab Sample #	Client Sample ID	Date Sampled	Matrix	Rpt Basis	Dry / Wet **
Method	Method Description / Work Location				
200-10085-1	MRQCTB-W-30127	3/27/2012 4:30:00 PM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet
200-10085-2	MRMW2S-W-30104	3/28/2012 2:42:00 PM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet
200-10085-3	MRMW4S-W-30106	3/28/2012 12:48:00 PM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet
200-10085-4	MRMW7S-W-30109	3/28/2012 3:43:00 PM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet
200-10085-5	MRMW8S-W-30110	3/28/2012 11:43:00 AM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet
200-10085-6	VHBLK01	3/29/2012 12:30:00 PM	Water		
SOM01.2_Vol_Tr	SOM01.2 Trace Volatile Organics / In-Lab			Total	Wet

* Method on-hold

** Wet/Dry indicates whether the reported results will be corrected for moisture content, and based on sample Wet weight or Dry

04/03/2012 Page 1 of 1

METHODOLOGY SUMMARY

Laboratory: TestAmerica Laboratories

Project No:

Location: South Burlington, Vermont

SDG No: 200-10085

VOA

Volatile Organics Trace - USEPA CLP SOM01.2

2A - FORM II VOA-1
WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085

Level: (TRACE or LOW) TRACE

	EPA SAMPLE NO.	VDMC1 (VCL) #	VDMC2 (CLA) #	VDMC3 (DCE) #	VDMC4 (BUT) #	VDMC5 (CLF) #	VDMC6 (DCA) #	VDMC7 (BEN) #
01	VBLKJG	99	102	77	100	97	102	104
02	MRQCTB-W-30127	100	102	80	222 *	101	105	101
03	MRMW2S-W-30104	97	100	77	192 *	99	102	101
04	MRMW4S-W-30106	99	102	80	204 *	102	107	102
05	MRMW7S-W-30109	98	102	80	199 *	101	103	102
06	MRMW8S-W-30110	98	101	79	176 *	100	105	102
07	VHBLK01	99	103	78	107	100	105	102

VDMC1 (VCL) = Vinyl Chloride-d3
VDMC2 (CLA) = Chloroethane-d5
VDMC3 (DCE) = 1,1-Dichloroethene-d2
VDMC4 (BUT) = 2-Butanone-d5
VDMC5 (CLF) = Chloroform-d
VDMC6 (DCA) = 1,2-Dichloroethane-d4
VDMC7 (BEN) = Benzene-d6

QC LIMITS
(65-131)
(71-131)
(55-104)
(49-155)
(78-121)
(78-129)
(77-124)

Column to be used to flag recovery values
* Values outside of contract required QC limits

2B - FORM II VOA-2
WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085

Level: (TRACE or LOW) TRACE

	EPA SAMPLE NO.	VDMC8 (DPA) #	VDMC9 (TOL) #	VDMC10 (TDP) #	VDMC11 (HEX) #	VDMC12 (TCA) #	VDMC13 (DCZ) #	OTHER	TOT OUT
01	VBLKJG	92	104	99	105	96	101		0
02	MRQCTB-W-30127	92	102	100	261 *	98	103		2
03	MRMW2S-W-30104	92	102	99	209 *	97	98		2
04	MRMW4S-W-30106	92	102	103	214 *	102	100		2
05	MRMW7S-W-30109	93	104	102	202 *	99	102		2
06	MRMW8S-W-30110	92	102	98	177 *	99	100		2
07	VHBLK01	93	101	99	111	96	100		0

VDMC8 (DPA) = 1,2-Dichloropropane-d6
VDMC9 (TOL) = Toluene-d8
VDMC10 (TDP) = trans-1,3-Dichloropropene-d4
VDMC11 (HEX) = 2-Hexanone-d5
VDMC12 (TCA) = 1,1,2,2-Tetrachloroethane-d2
VDMC13 (DCZ) = 1,2-Dichlorobenzene-d4

QC LIMITS

(79-124)
(77-121)
(73-121)
(28-135)
(73-125)
(80-131)

Column to be used to flag recovery values
* Values outside of contract required QC limits

Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only

4A - FORM IV VOA
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKJG

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085

Lab File ID: JDED04.D

Lab Sample ID: MB 200-36015/4

Instrument ID: J.i

Matrix: (SOIL/SED/WATER) Water

Date Analyzed: 03/30/2012

Level: (TRACE or LOW/MED) TRACE

Time Analyzed: 1016

GC Column: DB-624 ID: 0.20 (mm)

Heated Purge: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	MRQCTB-W-301 27	200-10085-1	JDED08.D	1204
02	MRMW2S-W-301 04	200-10085-2	JDED09.D	1228
03	MRMW4S-W-301 06	200-10085-3	JDED10.D	1252
04	MRMW7S-W-301 09	200-10085-4	JDED11.D	1316
05	MRMW8S-W-301 10	200-10085-5	JDED12.D	1340
06	VHBLK01	200-10085-6	JDED13.D	1404

COMMENTS:

5A - FORM V VOA
VOLATILE ORGANICS INSTRUMENT
PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

EPA SAMPLE NO.

BFBJC

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Lab File Id: JDE01.D BFB Injection Date: 03/22/2012
Instrument Id: J.i BFB Injection Time: 1225
GC Column: DB-624 ID: 0.20 (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.1
75	30.0 - 80.0% of mass 95	51.9
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.1 (0.2)1
174	50.0 - 120% of mass 95	78.8
175	5.0 - 9.0% of mass 174	6.3 (8.0)1
176	95.0 - 101% of mass 174	77.2 (97.9)1
177	5.0 - 9.0% of mass 176	4.9 (6.4)2

1 - Value is %mass 174

2 - Value is %mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0.5JC	IC 200-35509/4	JDE04.D	03/22/2012	1341
02	VSTD001JC	IC 200-35509/5	JDE05.D	03/22/2012	1406
03	VSTD005JC	ICIS 200-35509/6	JDE06.D	03/22/2012	1430
04	VSTD010JC	IC 200-35509/7	JDE07.D	03/22/2012	1454
05	VSTD020JC	IC 200-35509/8	JDE08.D	03/22/2012	1518

5A - FORM V VOA
VOLATILE ORGANICS INSTRUMENT
PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

EPA SAMPLE NO.

BFBJG

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV

Case No.: MORRIL Mod. Ref No.:

SDG No.: 200-10085

Lab File Id: JDED01.D

BFB Injection Date: 03/30/2012

Instrument Id: J.i

BFB Injection Time: 0915

GC Column: DB-624

ID: 0.20

(mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.0
75	30.0 - 80.0% of mass 95	51.3
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	0 (0)1
174	50.0 - 120% of mass 95	83.4
175	5.0 - 9.0% of mass 174	6.5 (7.8)1
176	95.0 - 101% of mass 174	80.1 (96.0)1
177	5.0 - 9.0% of mass 176	5.2 (6.5)2

1 - Value is %mass 174

2 - Value is %mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005JG	CCVIS 200-36015/2	JDED02.D	03/30/2012	0927
02	VLKJG	MB 200-36015/4	JDED04.D	03/30/2012	1016
03	MRQCTB-W-3 0127	200-10085-1	JDED08.D	03/30/2012	1204
04	MRMW2S-W-3 0104	200-10085-2	JDED09.D	03/30/2012	1228
05	MRMW4S-W-3 0106	200-10085-3	JDED10.D	03/30/2012	1252
06	MRMW7S-W-3 0109	200-10085-4	JDED11.D	03/30/2012	1316
07	MRMW8S-W-3 0110	200-10085-5	JDED12.D	03/30/2012	1340
08	VHBLK01	200-10085-6	JDED13.D	03/30/2012	1404
09	VSTD005GJ	CCVC 200-36015/27	JDED27.D	03/30/2012	1942

8A - FORM VIII VOA
VOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
 GC Column: DB-624 ID: 0.20 (mm) Init. Calib. Date(s): 03/22/2012 03/22/2012
 EPA Sample No. (VSTD#####): VSTD005JG Date Analyzed: 03/30/2012
 Lab File ID (Standard): JDED02.D Time Analyzed: 0927
 Instrument ID: J.i Heated Purge: (Y/N) N

	IS1 (CBZ)		RT #	IS2 (DFB)		RT #	IS3 (DCB)	
	AREA	#		AREA	#		AREA	#
12 HOUR STD	198627		8.88	252653		5.53	95621	11.71
UPPER LIMIT	278078		9.21	353714		5.86	133869	12.04
LOWER LIMIT	119176		8.55	151592		5.20	57373	11.38
EPA SAMPLE NO.								
01 VBLKJG	198650		8.89	249782		5.54	93917	11.71
02 MRQCTB-W-30127	211232		8.89	257959		5.54	99337	11.71
03 MRMW2S-W-30104	207673		8.89	257169		5.54	100112	11.71
04 MRMW4S-W-30106	196685		8.89	241108		5.54	93905	11.71
05 MRMW7S-W-30109	201479		8.89	248867		5.54	96995	11.71
06 MRMW8S-W-30110	198617		8.89	246079		5.54	95379	11.71
07 VHBLK01	197300		8.89	243830		5.54	94691	11.71

IS1 (CBZ) = Chlorobenzene-d5
 IS2 (DFB) = 1,4-Difluorobenzene
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = 140% (Trace Volatiles) of internal standard area
 AREA LOWER LIMIT = 60% (Trace Volatiles) of internal standard area
 RT UPPER LIMIT = + 0.33 (Trace Volatiles) minutes of internal standard RT
 RT LOWER LIMIT = - 0.33 (Trace Volatiles) minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MRMW2S-W-30104

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-2
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED09.D
Level: (TRACE/LOW/MED) TRACE Date Received: 03/29/2012
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.19	J
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MRMW2S-W-30104

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-10085-2

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: JDED09.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 03/29/2012

% Moisture: not dec.

Date Analyzed: 03/30/2012

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.038	J
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.033	J
95-47-6	o-Xylene	0.035	J
179601-23-1	m,p-Xylene	0.15	J
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
MRMW2S-W-30104

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-2
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED09.D
Level: (TRACE or LOW/MED) TRACE Date Received: 03/29/2012
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.86	3.2	B X J
02	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MRMW4S-W-30106

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-3
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED10.D
Level: (TRACE/LOW/MED) TRACE Date Received: 03/29/2012
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.14	J
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MRMW4S-W-30106

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-10085-3

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: JDED10.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 03/29/2012

% Moisture: not dec.

Date Analyzed: 03/30/2012

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.035	J
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.034	J
95-47-6	o-Xylene	0.037	J
179601-23-1	m,p-Xylene	0.16	J
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MRMW4S-W-30106

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-3
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED10.D
Level: (TRACE or LOW/MED) TRACE Date Received: 03/29/2012
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.86	3.4	B X J
02	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MRMW7S-W-30109

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-10085-4

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: JDED11.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 03/29/2012

% Moisture: not dec.

Date Analyzed: 03/30/2012

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	12	
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MRMW7S-W-30109

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-4
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED11.D
Level: (TRACE/LOW/MED) TRACE Date Received: 03/29/2012
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.016	J
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.084	J
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MRMW7S-W-30109

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-4
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED11.D
Level: (TRACE or LOW/MED) TRACE Date Received: 03/29/2012
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.86	3.3	B X J
02	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MRMW8S-W-30110

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-5
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED12.D
Level: (TRACE/LOW/MED) TRACE Date Received: 03/29/2012
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	J
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MRMW8S-W-30110

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-10085-5

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: JDED12.D

Level: (TRACE/LOW/MED) TRACE

Date Received: 03/29/2012

% Moisture: not dec.

Date Analyzed: 03/30/2012

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.032	J
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.028	J
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.19	J
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MRMW8S-W-30110

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-5
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED12.D
Level: (TRACE or LOW/MED) TRACE Date Received: 03/29/2012
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.86	3.2	B X J
02	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MRQCTB-W-30127

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-1
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED08.D
Level: (TRACE/LOW/MED) TRACE Date Received: 03/29/2012
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	3.7	J
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.035	J
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MRQCTB-W-30127

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-1
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED08.D
Level: (TRACE/LOW/MED) TRACE Date Received: 03/29/2012
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.19	J
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.040	J
95-47-6	o-Xylene	0.049	J
179601-23-1	m,p-Xylene	0.18	J
100-42-5	Styrene	0.040	J
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MRQCTB-W-30127

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-1
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED08.D
Level: (TRACE or LOW/MED) TRACE Date Received: 03/29/2012
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.86	3.3	B X J
02	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

6A - FORM VI VOA-1
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
 Instrument ID: J.i Calibration Date(s): 03/22/2012 03/22/2012
 Heated Purge: (Y/N) N Calibration Time(s): 1341 1518
 Purge Volume: 25.0 (mL)
 GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)

LAB FILE ID: _____		RRF0.5 = JDE04.D			RRF1.0 = JDE05.D		
RRF5.0 = JDE06.D		RRF10 = JDE07.D			RRF20 = JDE08.D		
COMPOUND	RRF0.5	RRF1.0	RRF5.0	RRF10	RRF20	RRF	%RSD
Dichlorodifluoromethane	0.440	0.425	0.418	0.404	0.426	0.422	3.1
Chloromethane	0.637	0.523	0.522	0.499	0.524	0.541	10.1
Vinyl chloride	0.511	0.492	0.480	0.473	0.486	0.489	3.0
Bromomethane	0.263	0.245	0.248	0.252	0.269	0.255	3.9
Chloroethane	0.366	0.317	0.306	0.306	0.317	0.323	7.7
Trichlorofluoromethane	0.633	0.599	0.594	0.597	0.617	0.608	2.7
1,1-Dichloroethene	0.358	0.335	0.342	0.344	0.361	0.348	3.3
1,1,2-Trichloro- 1,2,2-trifluoroethane	0.428	0.404	0.398	0.381	0.409	0.404	4.2
Acetone	0.027	0.023	0.020	0.019	0.020	0.022	15.0
Carbon disulfide	1.092	1.002	0.937	0.963	0.992	0.997	5.9
Methyl acetate	0.055	0.055	0.053	0.052	0.059	0.055	4.9
Methylene Chloride	0.300	0.260	0.259	0.248	0.255	0.265	7.8
trans-1,2-Dichloroethene	0.348	0.335	0.334	0.337	0.350	0.341	2.3
Methyl tert-butyl ether	0.116	0.197	0.234	0.334	0.345	0.245	39.3
1,1-Dichloroethane	0.656	0.659	0.654	0.651	0.667	0.657	0.9
cis-1,2-Dichloroethene	0.333	0.305	0.308	0.313	0.325	0.317	3.8
2-Butanone	0.034	0.027	0.034	0.032	0.036	0.033	10.0
Bromochloromethane	0.092	0.088	0.092	0.091	0.094	0.091	2.4
Chloroform	0.582	0.561	0.543	0.536	0.552	0.555	3.2
1,1,1-Trichloroethane	0.699	0.669	0.686	0.699	0.687	0.688	1.8
Cyclohexane	0.932	0.889	0.915	0.923	0.948	0.922	2.4
Carbon tetrachloride	0.602	0.594	0.625	0.626	0.630	0.616	2.6
Benzene	1.664	1.611	1.711	1.751	1.761	1.700	3.7
1,2-Dichloroethane	0.251	0.243	0.253	0.237	0.249	0.247	2.6
Trichloroethene	0.416	0.405	0.421	0.440	0.438	0.424	3.5
Methylcyclohexane	0.714	0.688	0.740	0.732	0.770	0.729	4.2

Report 1,4-Dioxane for Low-Medium VOA analysis only

6B - FORM VI VOA-2
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
 Instrument ID: J.i Calibration Date(s): 03/22/2012 03/22/2012
 Heated Purge: (Y/N) N Calibration Time(s): 1341 1518
 Purge Volume: 25.0 (mL)
 GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)

LAB FILE ID: <u> </u>		RRF0.5 = <u>JDE04.D</u>		RRF1.0 = <u>JDE05.D</u>			
RRF5.0 = <u>JDE06.D</u>		RRF10 = <u>JDE07.D</u>		RRF20 = <u>JDE08.D</u>			
COMPOUND	RRF0.5	RRF1.0	RRF5.0	RRF10	RRF20	RRF	%RSD
1,2-Dichloropropane	0.362	0.329	0.370	0.380	0.378	0.364	5.8
Bromodichloromethane	0.355	0.348	0.385	0.388	0.379	0.371	5.0
cis-1,3-Dichloropropene	0.440	0.409	0.487	0.492	0.504	0.466	8.6
4-Methyl-2-pentanone	0.102	0.094	0.104	0.102	0.106	0.102	4.6
Toluene	1.797	1.726	1.813	1.864	1.889	1.818	3.5
trans-1,3-Dichloropropene	0.279	0.267	0.316	0.327	0.343	0.306	10.6
1,1,2-Trichloroethane	0.165	0.136	0.149	0.149	0.151	0.150	7.0
Tetrachloroethene	0.383	0.368	0.374	0.391	0.399	0.383	3.3
2-Hexanone	0.064	0.065	0.073	0.071	0.073	0.069	6.4
Dibromochloromethane	0.169	0.167	0.198	0.200	0.206	0.188	9.7
1,2-Dibromoethane	0.128	0.118	0.132	0.134	0.135	0.129	5.4
Chlorobenzene	1.063	0.995	1.024	1.047	1.060	1.038	2.7
Ethylbenzene	2.024	1.996	2.087	2.176	2.244	2.105	4.9
o-Xylene	0.685	0.682	0.742	0.768	0.807	0.737	7.3
m,p-Xylene	0.758	0.762	0.806	0.836	0.871	0.807	5.9
Styrene	0.956	0.942	1.072	1.127	1.191	1.058	10.2
Bromoform	0.149	0.158	0.181	0.190	0.195	0.175	11.5
Isopropylbenzene	1.992	2.023	2.158	2.301	2.386	2.172	7.9
1,1,2,2-Tetrachloroethane	0.143	0.131	0.141	0.142	0.150	0.141	4.8
1,3-Dichlorobenzene	1.564	1.506	1.575	1.586	1.650	1.576	3.3
1,4-Dichlorobenzene	1.576	1.523	1.568	1.529	1.568	1.553	1.6
1,2-Dichlorobenzene	1.255	1.161	1.242	1.224	1.270	1.230	3.4
1,2-Dibromo-3-Chloropropane	0.032	0.041	0.044	0.040	0.043	0.040	12.1
1,2,4-Trichlorobenzene	0.869	0.806	0.875	0.844	0.891	0.857	3.9
1,2,3-Trichlorobenzene	0.615	0.584	0.641	0.598	0.616	0.611	3.5

6C - FORM VI VOA-3
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
 Instrument ID: J.i Calibration Date(s): 03/22/2012 03/22/2012
 Heated Purge: (Y/N) N Calibration Time(s): 1341 1518
 Purge Volume: 25.0 (mL)
 GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)

LAB FILE ID: <u> </u>		RRF0.5 = <u>JDE04.D</u>		RRF1.0 = <u>JDE05.D</u>			
RRF5.0 = <u>JDE06.D</u>		RRF10 = <u>JDE07.D</u>		RRF20 = <u>JDE08.D</u>			
COMPOUND	RRF0.5	RRF1.0	RRF5.0	RRF10	RRF20	RRF	%RSD
Vinyl Chloride-d3	0.530	0.490	0.488	0.482	0.497	0.497	3.8
Chloroethane-d5	0.408	0.383	0.385	0.382	0.395	0.390	2.9
1,1-Dichloroethene-d2	0.886	0.851	0.854	0.854	0.893	0.868	2.3
2-Butanone-d5	0.030	0.026	0.030	0.030	0.032	0.030	6.9
Chloroform-d	0.607	0.561	0.577	0.565	0.586	0.579	3.1
1,2-Dichloroethane-d4	0.212	0.195	0.196	0.191	0.195	0.198	4.0
Benzene-d6	1.636	1.578	1.657	1.715	1.739	1.665	3.9
1,2-Dichloropropane-d6	0.430	0.467	0.491	0.426	0.499	0.463	7.3
Toluene-d8	1.490	1.480	1.568	1.603	1.628	1.554	4.3
trans-1,3-Dichloropropene-d4	0.266	0.251	0.284	0.297	0.311	0.282	8.4
2-Hexanone-d5	0.019	0.020	0.029	0.029	0.031	0.026	22.3
1,1,2,2-Tetrachloroethane-d2	0.143	0.132	0.149	0.147	0.152	0.144	5.3
1,2-Dichlorobenzene-d4	0.799	0.797	0.799	0.793	0.821	0.802	1.4

Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only

7A - FORM VII VOA-1
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Instrument ID: J.i Calibration Date: 03/30/2012 Time: 0927
Lab File Id: JDED02.D Init. Calib. Date(s): 03/22/2012 03/22/2012
EPA Sample No. (VSTD####): VSTD005JG Init. Calib. Time(s): 1341 1518
Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.422	0.457	0.010	8.2	40.0
Chloromethane	0.541	0.534	0.010	-1.2	40.0
Vinyl chloride	0.489	0.513	0.010	5.0	30.0
Bromomethane	0.255	0.279	0.010	9.3	30.0
Chloroethane	0.323	0.327	0.010	1.4	40.0
Trichlorofluoromethane	0.608	0.637	0.010	4.9	40.0
1,1-Dichloroethene	0.348	0.361	0.010	3.9	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	0.404	0.410	0.010	1.4	40.0
Acetone	0.022	0.021	0.010	-5.6	40.0
Carbon disulfide	0.997	1.029	0.010	3.2	40.0
Methyl acetate	0.055	0.061	0.010	11.0	40.0
Methylene Chloride	0.265	0.260	0.010	-1.7	40.0
trans-1,2-Dichloroethene	0.341	0.360	0.010	5.7	40.0
Methyl tert-butyl ether	0.245	0.183	0.010	-25.4	40.0
1,1-Dichloroethane	0.657	0.684	0.010	4.0	30.0
cis-1,2-Dichloroethene	0.317	0.317	0.010	0.2	40.0
2-Butanone	0.033	0.030	0.010	-9.3	40.0
Bromochloromethane	0.091	0.091	0.010	-0.9	30.0
Chloroform	0.555	0.552	0.010	-0.5	30.0
1,1,1-Trichloroethane	0.688	0.742	0.010	7.9	30.0
Cyclohexane	0.922	1.006	0.010	9.2	40.0
Carbon tetrachloride	0.616	0.689	0.010	11.8	30.0
Benzene	1.700	1.806	0.010	6.3	30.0
1,2-Dichloroethane	0.247	0.228	0.010	-7.5	30.0
Trichloroethene	0.424	0.457	0.010	7.8	30.0
Methylcyclohexane	0.729	0.806	0.010	10.5	40.0

Report 1,4-Dioxane for Low/Medium VOA analysis only

7B - FORM VII VOA-2
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Instrument ID: J.i Calibration Date: 03/30/2012 Time: 0927
Lab File Id: JDED02.D Init. Calib. Date(s): 03/22/2012 03/22/2012
EPA Sample No. (VSTD####): VSTD005JG Init. Calib. Time(s): 1341 1518
Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
1,2-Dichloropropane	0.364	0.370	0.010	1.5	40.0
Bromodichloromethane	0.371	0.387	0.010	4.1	30.0
cis-1,3-Dichloropropene	0.466	0.469	0.010	0.6	30.0
4-Methyl-2-pentanone	0.102	0.096	0.010	-5.4	40.0
Toluene	1.818	1.975	0.010	8.6	30.0
trans-1,3-Dichloropropene	0.306	0.303	0.010	-1.2	30.0
1,1,2-Trichloroethane	0.150	0.142	0.010	-5.5	30.0
Tetrachloroethene	0.383	0.420	0.010	9.6	30.0
2-Hexanone	0.069	0.065	0.010	-5.6	40.0
Dibromochloromethane	0.188	0.188	0.010	0.1	30.0
1,2-Dibromoethane	0.129	0.123	0.010	-4.6	40.0
Chlorobenzene	1.038	1.059	0.010	2.0	30.0
Ethylbenzene	2.105	2.281	0.010	8.4	30.0
o-Xylene	0.737	0.780	0.010	5.9	30.0
m,p-Xylene	0.807	0.885	0.010	9.7	30.0
Styrene	1.058	1.086	0.010	2.7	30.0
Bromoform	0.175	0.175	0.010	0.0	30.0
Isopropylbenzene	2.172	2.422	0.010	11.5	40.0
1,1,2,2-Tetrachloroethane	0.141	0.133	0.010	-6.2	30.0
1,3-Dichlorobenzene	1.576	1.650	0.010	4.7	30.0
1,4-Dichlorobenzene	1.553	1.569	0.010	1.0	30.0
1,2-Dichlorobenzene	1.230	1.239	0.010	0.7	30.0
1,2-Dibromo-3-Chloropropane	0.040	0.041	0.010	3.5	40.0
1,2,4-Trichlorobenzene	0.857	0.829	0.010	-3.2	30.0
1,2,3-Trichlorobenzene	0.611	0.576	0.010	-5.7	30.0

7C - FORM VII VOA-3
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Instrument ID: J.i Calibration Date: 03/30/2012 Time: 0927
Lab File Id: JDED02.D Init. Calib. Date(s): 03/22/2012 03/22/2012
EPA Sample No. (VSTD####): VSTD005JG Init. Calib. Time(s): 1341 1518
Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Vinyl Chloride-d3	0.497	0.518	0.010	4.2	30.0
Chloroethane-d5	0.390	0.410	0.010	4.9	40.0
1,1-Dichloroethene-d2	0.868	0.894	0.010	3.1	30.0
2-Butanone-d5	0.030	0.027	0.010	-7.9	40.0
Chloroform-d	0.579	0.576	0.010	-0.6	30.0
1,2-Dichloroethane-d4	0.198	0.186	0.010	-6.0	30.0
Benzene-d6	1.665	1.750	0.010	5.1	30.0
1,2-Dichloropropane-d6	0.463	0.499	0.010	7.9	40.0
Toluene-d8	1.554	1.675	0.010	7.8	30.0
trans-1,3-Dichloropropene-d4	0.282	0.282	0.010	0.1	30.0
2-Hexanone-d5	0.026	0.025	0.010	-1.3	40.0
1,1,2,2-Tetrachloroethane-d2	0.144	0.137	0.010	-5.0	30.0
1,2-Dichlorobenzene-d4	0.802	0.801	0.010	-0.1	30.0

Report 1,4-Dioxane-d8 for Low/Medium VOA analysis only

7A - FORM VII VOA-1
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Instrument ID: J.i Calibration Date: 03/30/2012 Time: 1942
Lab File Id: JDED27.D Init. Calib. Date(s): 03/22/2012 03/22/2012
EPA Sample No. (VSTD####): VSTD005GJ Init. Calib. Time(s): 1341 1518
Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.422	0.437	0.010	3.5	50.0
Chloromethane	0.541	0.546	0.010	0.9	50.0
Vinyl chloride	0.489	0.493	0.100	1.0	50.0
Bromomethane	0.255	0.254	0.100	-0.7	50.0
Chloroethane	0.323	0.325	0.010	0.8	50.0
Trichlorofluoromethane	0.608	0.623	0.010	2.4	50.0
1,1-Dichloroethene	0.348	0.347	0.100	-0.2	50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	0.404	0.409	0.010	1.3	50.0
Acetone	0.022	0.020	0.010	-10.0	50.0
Carbon disulfide	0.997	0.980	0.010	-1.7	50.0
Methyl acetate	0.055	0.050	0.010	-8.0	50.0
Methylene Chloride	0.265	0.264	0.010	-0.1	50.0
trans-1,2-Dichloroethene	0.341	0.344	0.010	1.1	50.0
Methyl tert-butyl ether	0.245	0.271	0.010	10.6	50.0
1,1-Dichloroethane	0.657	0.683	0.200	3.9	50.0
cis-1,2-Dichloroethene	0.317	0.322	0.010	1.6	50.0
2-Butanone	0.033	0.034	0.010	3.1	50.0
Bromochloromethane	0.091	0.095	0.050	4.0	50.0
Chloroform	0.555	0.599	0.200	7.9	50.0
1,1,1-Trichloroethane	0.688	0.714	0.100	3.7	50.0
Cyclohexane	0.922	0.966	0.010	4.8	50.0
Carbon tetrachloride	0.616	0.645	0.100	4.8	50.0
Benzene	1.700	1.769	0.400	4.1	50.0
1,2-Dichloroethane	0.247	0.254	0.100	3.1	50.0
Trichloroethene	0.424	0.432	0.300	2.0	50.0
Methylcyclohexane	0.729	0.762	0.010	4.6	50.0

Report 1,4-Dioxane for Low/Medium VOA analysis only

7B - FORM VII VOA-2
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
 Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
 Instrument ID: J.i Calibration Date: 03/30/2012 Time: 1942
 Lab File Id: JDED27.D Init. Calib. Date(s): 03/22/2012 03/22/2012
 EPA Sample No.(VSTD####): VSTD005GJ Init. Calib. Time(s): 1341 1518
 Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
 Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
1,2-Dichloropropane	0.364	0.382	0.010	4.9	50.0
Bromodichloromethane	0.371	0.398	0.200	7.3	50.0
cis-1,3-Dichloropropene	0.466	0.477	0.200	2.2	50.0
4-Methyl-2-pentanone	0.102	0.105	0.010	3.3	50.0
Toluene	1.818	1.893	0.400	4.2	50.0
trans-1,3-Dichloropropene	0.306	0.308	0.100	0.6	50.0
1,1,2-Trichloroethane	0.150	0.155	0.100	3.1	50.0
Tetrachloroethene	0.383	0.385	0.100	0.4	50.0
2-Hexanone	0.069	0.073	0.010	4.7	50.0
Dibromochloromethane	0.188	0.194	0.100	3.0	50.0
1,2-Dibromoethane	0.129	0.130	0.010	0.1	50.0
Chlorobenzene	1.038	1.050	0.500	1.2	50.0
Ethylbenzene	2.105	2.160	0.100	2.6	50.0
o-Xylene	0.737	0.763	0.300	3.5	50.0
m,p-Xylene	0.807	0.838	0.300	3.9	50.0
Styrene	1.058	1.101	0.300	4.1	50.0
Bromoform	0.175	0.171	0.050	-2.4	50.0
Isopropylbenzene	2.172	2.262	0.010	4.1	50.0
1,1,2,2-Tetrachloroethane	0.141	0.143	0.100	1.6	50.0
1,3-Dichlorobenzene	1.576	1.561	0.400	-1.0	50.0
1,4-Dichlorobenzene	1.553	1.546	0.400	-0.4	50.0
1,2-Dichlorobenzene	1.230	1.244	0.400	1.1	50.0
1,2-Dibromo-3-Chloropropane	0.040	0.038	0.010	-4.2	50.0
1,2,4-Trichlorobenzene	0.857	0.835	0.200	-2.5	50.0
1,2,3-Trichlorobenzene	0.611	0.592	0.200	-3.1	50.0

7C - FORM VII VOA-3
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Instrument ID: J.i Calibration Date: 03/30/2012 Time: 1942
Lab File Id: JDED27.D Init. Calib. Date(s): 03/22/2012 03/22/2012
EPA Sample No. (VSTD####): VSTD005GJ Init. Calib. Time(s): 1341 1518
Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.20 (mm) Length: 25 (m)
Purge Volume: 25.0 (mL)

COMPOUND	RRF	RRF5.0	MIN RRF	%D	MAX %D
Vinyl Chloride-d3	0.497	0.503	0.010	1.1	50.0
Chloroethane-d5	0.390	0.403	0.010	3.3	50.0
1,1-Dichloroethene-d2	0.868	0.887	0.010	2.2	50.0
2-Butanone-d5	0.030	0.031	0.010	6.3	50.0
Chloroform-d	0.579	0.599	0.010	3.4	50.0
1,2-Dichloroethane-d4	0.198	0.201	0.010	1.6	50.0
Benzene-d6	1.665	1.733	0.010	4.1	50.0
1,2-Dichloropropane-d6	0.463	0.515	0.010	11.3	50.0
Toluene-d8	1.554	1.625	0.010	4.6	50.0
trans-1,3-Dichloropropene-d4	0.282	0.287	0.010	1.9	50.0
2-Hexanone-d5	0.026	0.030	0.010	16.2	50.0
1,1,2,2-Tetrachloroethane-d2	0.144	0.149	0.010	2.9	50.0
1,2-Dichlorobenzene-d4	0.802	0.801	0.010	-0.1	50.0

Report 1,4-Dioxane-d8 for Low/Medium VOA analysis only

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKJG

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV

Case No.: MORRIL Mod. Ref No.:

SDG No.: 200-10085

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: MB 200-36015/4

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: JDED04.D

Level: (TRACE/LOW/MED) TRACE

Date Received:

% Moisture: not dec.

Date Analyzed: 03/30/2012

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.076	J
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (4/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKJG

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: MB 200-36015/4
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED04.D
Level: (TRACE/LOW/MED) TRACE Date Received:
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKJG

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: MB 200-36015/4
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED04.D
Level: (TRACE or LOW/MED) TRACE Date Received:
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.86	3.2	X J
02		Unknown	10.65	0.76	J
03	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VHBLK01

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-6
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED13.D
Level: (TRACE/LOW/MED) TRACE Date Received:
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	0.50	U
79-20-9	Methyl acetate	0.50	U
75-09-2	Methylene Chloride	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
74-97-5	Bromochloromethane	0.50	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (4/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VHBLK01

Lab Name: TESTAMERICA BURLINGTON

Contract: 8E-00302

Lab Code: STLV

Case No.: MORRIL Mod. Ref No.:

SDG No.: 200-10085

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: 200-10085-6

Sample wt/vol: 25.0 (g/mL) mL

Lab File ID: JDED13.D

Level: (TRACE/LOW/MED) TRACE

Date Received:

% Moisture: not dec.

Date Analyzed: 03/30/2012

GC Column: DB-624 ID: 0.20 (mm)

Dilution Factor: 1.0

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Purge Volume: 25.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.50	U
108-87-2	Methylcyclohexane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
75-27-4	Bromodichloromethane	0.50	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.50	U
10061-02-6	trans-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
95-47-6	o-Xylene	0.50	U
179601-23-1	m,p-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
98-82-8	Isopropylbenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VHBLK01

Lab Name: TESTAMERICA BURLINGTON Contract: 8E-00302
Lab Code: STLV Case No.: MORRIL Mod. Ref No.: SDG No.: 200-10085
Matrix: (SOIL/SED/WATER) Water Lab Sample ID: 200-10085-6
Sample wt/vol: 25.0 (g/mL) mL Lab File ID: JDED13.D
Level: (TRACE or LOW/MED) TRACE Date Received:
% Moisture: not dec. Date Analyzed: 03/30/2012
GC Column: DB-624 ID: 0.20 (mm) Dilution Factor: 1.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown	6.86	3.2	B X J
02	E966796 ¹	Total Alkanes	N/A		

¹EPA-designated Registry Number.

Supplement 3:

**Sample Documentation from TestAmerica Laboratories, Inc., for
Nitrate Analyses of Groundwater Samples**

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Chicago

2417 Bond Street

University Park, IL 60484

Tel: (708)534-5200

TestAmerica Job ID: 500-45109-1

Client Project/Site: Morrill, KS

For:

Argonne National Laboratory

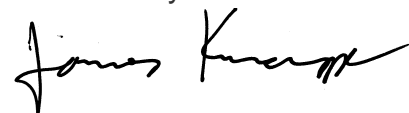
9700 South Cass Avenue

Building 203

Office B-149

Argonne, Illinois 60439

Attn: Mr. Clyde Dennis



Authorized for release by:

4/3/2012 10:02:27 AM

Jim Knapp

Customer Service Manager

jim.knapp@testamericainc.com

LINKS

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Job ID: 500-45109-1

Laboratory: TestAmerica Chicago

Narrative

Job Narrative
500-45109-1

Comments

No additional comments.

Receipt

All samples were received in good condition within temperature requirements.

General Chemistry

No analytical or quality issues were noted.

Detection Summary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW1D-W-30103

Lab Sample ID: 500-45109-1

No Detections

Client Sample ID: MRMW2S-W-30104

Lab Sample ID: 500-45109-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	16		1.0	0.23	mg/L	10		300.0	Total/NA

Client Sample ID: MRMW3S-W-30105

Lab Sample ID: 500-45109-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	16		1.0	0.23	mg/L	10		300.0	Total/NA

Client Sample ID: MRMW4S-W-30106

Lab Sample ID: 500-45109-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	19		1.0	0.23	mg/L	10		300.0	Total/NA

Client Sample ID: MRMW5S-W-30107

Lab Sample ID: 500-45109-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	14		1.0	0.23	mg/L	10		300.0	Total/NA

Client Sample ID: MRMW6S-W-30108

Lab Sample ID: 500-45109-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	0.095	J	0.10	0.023	mg/L	1		300.0	Total/NA

Client Sample ID: MRMW7S-W-30109

Lab Sample ID: 500-45109-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	22		1.0	0.23	mg/L	10		300.0	Total/NA

Client Sample ID: MRMW8S-W-30110

Lab Sample ID: 500-45109-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	9.8		1.0	0.23	mg/L	10		300.0	Total/NA

Client Sample ID: MRMW9S-W-30111

Lab Sample ID: 500-45109-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	14		1.0	0.23	mg/L	10		300.0	Total/NA

Client Sample ID: MRMW10S-W-30112

Lab Sample ID: 500-45109-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	11		1.0	0.23	mg/L	10		300.0	Total/NA

Client Sample ID: MRMW11S-W-30113

Lab Sample ID: 500-45109-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	18		1.0	0.23	mg/L	10		300.0	Total/NA

Client Sample ID: MRISCH-W-30114

Lab Sample ID: 500-45109-12

No Detections

Detection Summary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRRILLINGER-W-30115

Lab Sample ID: 500-45109-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	3.3		0.10	0.023	mg/L	1		300.0	Total/NA

Client Sample ID: MRSTONE-W-30116

Lab Sample ID: 500-45109-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	6.2		1.0	0.23	mg/L	10		300.0	Total/NA

Client Sample ID: MRTD12-W-30117

Lab Sample ID: 500-45109-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	0.27		0.10	0.023	mg/L	1		300.0	Total/NA

Method Summary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

Laboratory References:

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-45109-1	MRMW1D-W-30103	Water	03/28/12 11:02	03/29/12 10:30
500-45109-2	MRMW2S-W-30104	Water	03/28/12 14:42	03/29/12 10:30
500-45109-3	MRMW3S-W-30105	Water	03/28/12 13:42	03/29/12 10:30
500-45109-4	MRMW4S-W-30106	Water	03/28/12 12:48	03/29/12 10:30
500-45109-5	MRMW5S-W-30107	Water	03/28/12 15:46	03/29/12 10:30
500-45109-6	MRMW6S-W-30108	Water	03/28/12 10:43	03/29/12 10:30
500-45109-7	MRMW7S-W-30109	Water	03/28/12 15:43	03/29/12 10:30
500-45109-8	MRMW8S-W-30110	Water	03/28/12 11:43	03/29/12 10:30
500-45109-9	MRMW9S-W-30111	Water	03/28/12 14:54	03/29/12 10:30
500-45109-10	MRMW10S-W-30112	Water	03/28/12 12:36	03/29/12 10:30
500-45109-11	MRMW11S-W-30113	Water	03/28/12 13:56	03/29/12 10:30
500-45109-12	MRISCH-W-30114	Water	03/28/12 16:50	03/29/12 10:30
500-45109-13	MRRILLINGER-W-30115	Water	03/28/12 16:34	03/29/12 10:30
500-45109-14	MRSTONE-W-30116	Water	03/28/12 16:20	03/29/12 10:30
500-45109-15	MRTD12-W-30117	Water	03/28/12 17:02	03/29/12 10:30

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW1D-W-30103

Lab Sample ID: 500-45109-1

Date Collected: 03/28/12 11:02

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.10		0.10	0.023	mg/L			03/29/12 20:48	1

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW2S-W-30104

Lab Sample ID: 500-45109-2

Date Collected: 03/28/12 14:42

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	16		1.0	0.23	mg/L			03/30/12 00:23	10

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW3S-W-30105

Lab Sample ID: 500-45109-3

Date Collected: 03/28/12 13:42

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	16		1.0	0.23	mg/L			03/29/12 22:57	10

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW4S-W-30106

Lab Sample ID: 500-45109-4

Date Collected: 03/28/12 12:48

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	19		1.0	0.23	mg/L			03/29/12 22:29	10

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW5S-W-30107

Lab Sample ID: 500-45109-5

Date Collected: 03/28/12 15:46

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	14		1.0	0.23	mg/L			03/30/12 01:49	10

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW6S-W-30108

Lab Sample ID: 500-45109-6

Date Collected: 03/28/12 10:43

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.095	J	0.10	0.023	mg/L			03/29/12 19:51	1

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW7S-W-30109

Lab Sample ID: 500-45109-7

Date Collected: 03/28/12 15:43

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	22		1.0	0.23	mg/L			03/30/12 01:20	10

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW8S-W-30110

Lab Sample ID: 500-45109-8

Date Collected: 03/28/12 11:43

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	9.8		1.0	0.23	mg/L			03/29/12 21:31	10

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW9S-W-30111

Lab Sample ID: 500-45109-9

Date Collected: 03/28/12 14:54

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	14		1.0	0.23	mg/L			03/30/12 00:52	10

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW10S-W-30112

Lab Sample ID: 500-45109-10

Date Collected: 03/28/12 12:36

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	11		1.0	0.23	mg/L			03/29/12 22:00	10

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRMW11S-W-30113

Lab Sample ID: 500-45109-11

Date Collected: 03/28/12 13:56

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	18		1.0	0.23	mg/L			03/29/12 23:55	10

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRISCH-W-30114

Lab Sample ID: 500-45109-12

Date Collected: 03/28/12 16:50

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.10		0.10	0.023	mg/L			03/30/12 03:29	1

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRRILLINGER-W-30115

Lab Sample ID: 500-45109-13

Date Collected: 03/28/12 16:34

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	3.3		0.10	0.023	mg/L			03/30/12 03:01	1

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRSTONE-W-30116

Lab Sample ID: 500-45109-14

Date Collected: 03/28/12 16:20

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	6.2		1.0	0.23	mg/L			03/30/12 02:46	10

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Client Sample ID: MRTD12-W-30117

Lab Sample ID: 500-45109-15

Date Collected: 03/28/12 17:02

Matrix: Water

Date Received: 03/29/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.27		0.10	0.023	mg/L			03/30/12 03:58	1

Definitions/Glossary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Association Summary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

General Chemistry

Analysis Batch: 144899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-45109-1	MRMW1D-W-30103	Total/NA	Water	300.0	
500-45109-2	MRMW2S-W-30104	Total/NA	Water	300.0	
500-45109-3	MRMW3S-W-30105	Total/NA	Water	300.0	
500-45109-4	MRMW4S-W-30106	Total/NA	Water	300.0	
500-45109-5	MRMW5S-W-30107	Total/NA	Water	300.0	
500-45109-6	MRMW6S-W-30108	Total/NA	Water	300.0	
500-45109-7	MRMW7S-W-30109	Total/NA	Water	300.0	
500-45109-8	MRMW8S-W-30110	Total/NA	Water	300.0	
500-45109-9	MRMW9S-W-30111	Total/NA	Water	300.0	
500-45109-10	MRMW10S-W-30112	Total/NA	Water	300.0	
500-45109-11	MRMW11S-W-30113	Total/NA	Water	300.0	
500-45109-12	MRISCH-W-30114	Total/NA	Water	300.0	
500-45109-13	MRRILLINGER-W-30115	Total/NA	Water	300.0	
500-45109-14	MRSTONE-W-30116	Total/NA	Water	300.0	
500-45109-14 MS	MRSTONE-W-30116	Total/NA	Water	300.0	
500-45109-14 MS	MRSTONE-W-30116	Total/NA	Water	300.0	
500-45109-14 MSD	MRSTONE-W-30116	Total/NA	Water	300.0	
500-45109-14 MSD	MRSTONE-W-30116	Total/NA	Water	300.0	
500-45109-15	MRTD12-W-30117	Total/NA	Water	300.0	
LCS 500-144899/4	Lab Control Sample	Total/NA	Water	300.0	
MB 500-144899/3	Method Blank	Total/NA	Water	300.0	

QC Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-144899/3

Matrix: Water

Analysis Batch: 144899

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.10		0.10	0.023	mg/L			03/29/12 17:57	1

Lab Sample ID: LCS 500-144899/4

Matrix: Water

Analysis Batch: 144899

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	2.00	2.20		mg/L		110	90 - 110
Nitrate as N	2.00	2.06		mg/L		103	90 - 110

Lab Sample ID: 500-45109-14 MS

Matrix: Water

Analysis Batch: 144899

Client Sample ID: MRSTONE-W-30116

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	<0.20		2.00	1.89		mg/L		94	75 - 125

Lab Sample ID: 500-45109-14 MS

Matrix: Water

Analysis Batch: 144899

Client Sample ID: MRSTONE-W-30116

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	6.2		20.0	25.7		mg/L		97	75 - 125

Lab Sample ID: 500-45109-14 MSD

Matrix: Water

Analysis Batch: 144899

Client Sample ID: MRSTONE-W-30116

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromide	<0.20		2.00	2.10		mg/L		105	75 - 125	11	20

Lab Sample ID: 500-45109-14 MSD

Matrix: Water

Analysis Batch: 144899

Client Sample ID: MRSTONE-W-30116

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	6.2		20.0	25.8		mg/L		98	75 - 125	0	20

Certification Summary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45109-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Chicago	Alabama	State Program	4	40461
TestAmerica Chicago	California	NELAC	9	01132CA
TestAmerica Chicago	Florida	NELAC	4	E871072
TestAmerica Chicago	Georgia	State Program	4	939
TestAmerica Chicago	Georgia	State Program	4	N/A
TestAmerica Chicago	Hawaii	State Program	9	N/A
TestAmerica Chicago	Illinois	NELAC	5	100201
TestAmerica Chicago	Indiana	State Program	5	C-IL-02
TestAmerica Chicago	Iowa	State Program	7	82
TestAmerica Chicago	Kansas	NELAC	7	E-10161
TestAmerica Chicago	Kentucky	State Program	4	90023
TestAmerica Chicago	Kentucky (UST)	State Program	4	66
TestAmerica Chicago	L-A-B	DoD ELAP		L2304
TestAmerica Chicago	L-A-B	ISO/IEC 17025		L2304
TestAmerica Chicago	Louisiana	NELAC	6	30720
TestAmerica Chicago	Massachusetts	State Program	1	M-IL035
TestAmerica Chicago	Mississippi	State Program	4	N/A
TestAmerica Chicago	North Carolina DENR	State Program	4	291
TestAmerica Chicago	Oklahoma	State Program	6	8908
TestAmerica Chicago	South Carolina	State Program	4	77001
TestAmerica Chicago	Texas	NELAC	6	T104704252-09-TX
TestAmerica Chicago	USDA	Federal		P330-12-00038
TestAmerica Chicago	Virginia	NELAC Secondary AB	3	460142
TestAmerica Chicago	Wisconsin	State Program	5	999580010
TestAmerica Chicago	Wyoming	State Program	8	8TMS-Q

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

2893
500-45109

MATRIX: <u>Water</u>			ARGONNE NATIONAL LABORATORY CHAIN OF CUSTODY RECORD*			Shipping Container No.			
RECEIVING LAB: <u>Test America</u>						Shipping Info:			
PROJECT/SITE: <u>Morrill, KS</u>						ANL Field Contact (Name & Temporary Phone):			
SAMPLER(S) (Signature) <u>[Signature]</u>			Number of containers	ANALYSIS					REMARKS
DATE OF COLLECTION	SAMPLE ID NUMBER(S)								
1 <u>3-28-12</u>	<u>MRMW1D-W-30103</u>		1	1					<u>1 x 500ml for Total N</u>
2		<u>MRMW2S-W-30104</u>	1	1					
3		<u>MRMW3S-W-30105</u>	1	1					
4		<u>MRMW4S-W-30106</u>	1	1					
5		<u>MRMW5S-W-30107</u>	1	1					
6		<u>MRMW6S-W-30108</u>	1	1					
7		<u>MRMW7S-W-30109</u>	1	1					
8		<u>MRMW8S-W-30110</u>	1	1					
9		<u>MRMW9S-W-30111</u>	1	1					
10		<u>MRMW10S-W-30112</u>	1	1					
11		<u>MRMW11S-W-30113</u>	1	1					
12		<u>MRISCH-W-30114</u>	1	1					
13		<u>MRRINGER-W-30115</u>	1	1					
14		<u>MRSTONE-W-30116</u>	1	1					
15 <u>3-28-12</u>	<u>MRTD12-W-30117</u>		1	1					<u>1 x 500ml for Total N</u>
Relinquished by (Signature) <u>[Signature]</u>		Date <u>3/28/2012</u>	Time	Received by (Signature) <u>[Signature]</u>		Date		Time	Received by (Signature)
Relinquished by (Signature)		Date	Time	Received for Laboratory by		Date	Time	Remarks	
Y	N	FOR LAB USE ONLY			*A sample is under custody if:				
		Custody seal was intact when shipment received.			1. It is in your possession; or,				
		Sample containers were intact when received.			2. It is in your view, after having been in your possession; or,				
		Shipment was at required temperature when received.			3. It was in your possession and you locked it up; or,				
		Sample labels, Tags and COC agree.			4. It is in a designated secure area.				

Argonne National Laboratory, Applied Geosciences & Environmental Mgt. Group, Environmental Research Division, 9700 S. Cass Avenue, Argonne, IL 60439

Login Sample Receipt Checklist

Client: Argonne National Laboratory

Job Number: 500-45109-1

Login Number: 45109

List Source: TestAmerica Chicago

List Number: 1

Creator: Knapp, Jim

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	2.8
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Chicago

2417 Bond Street

University Park, IL 60484

Tel: (708)534-5200

TestAmerica Job ID: 500-45139-1

Client Project/Site: Morrill, KS

For:

Argonne National Laboratory

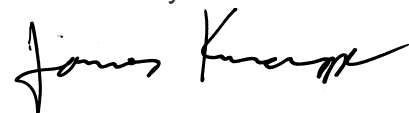
9700 South Cass Avenue

Building 203

Office B-149

Argonne, Illinois 60439

Attn: Mr. Clyde Dennis



Authorized for release by:

4/3/2012 12:53:59 PM

Jim Knapp

Customer Service Manager

jim.knapp@testamericainc.com

LINKS

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results through

TotalAccess

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45139-1

Job ID: 500-45139-1

Laboratory: TestAmerica Chicago

Narrative

Job Narrative
500-45139-1

Comments

No additional comments.

Receipt

All samples were received in good condition within temperature requirements.

General Chemistry

Method(s) 300.0:

No other analytical or quality issues were noted.

Detection Summary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45139-1

Client Sample ID: MRMW1S3X-W-30102

Lab Sample ID: 500-45139-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	9.6		1.0	0.23	mg/L	10		300.0	Total/NA

Method Summary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45139-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

Laboratory References:

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45139-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-45139-1	MRMW1S3X-W-30102	Water	03/29/12 15:26	03/30/12 10:30

Client Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45139-1

Client Sample ID: MRMW1S3X-W-30102

Lab Sample ID: 500-45139-1

Date Collected: 03/29/12 15:26

Matrix: Water

Date Received: 03/30/12 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	9.6		1.0	0.23	mg/L			03/31/12 00:05	10

Definitions/Glossary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45139-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Association Summary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45139-1

General Chemistry

Analysis Batch: 145055

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-45139-1	MRMW1S3X-W-30102	Total/NA	Water	300.0	
LCS 500-145055/51	Lab Control Sample	Total/NA	Water	300.0	
MB 500-145055/50	Method Blank	Total/NA	Water	300.0	

QC Sample Results

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45139-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-145055/50

Matrix: Water

Analysis Batch: 145055

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.10		0.10	0.023	mg/L			03/30/12 22:10	1

Lab Sample ID: LCS 500-145055/51

Matrix: Water

Analysis Batch: 145055

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	2.00	1.99		mg/L		99	90 - 110

Certification Summary

Client: Argonne National Laboratory
Project/Site: Morrill, KS

TestAmerica Job ID: 500-45139-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Chicago	Alabama	State Program	4	40461
TestAmerica Chicago	California	NELAC	9	01132CA
TestAmerica Chicago	Florida	NELAC	4	E871072
TestAmerica Chicago	Georgia	State Program	4	939
TestAmerica Chicago	Georgia	State Program	4	N/A
TestAmerica Chicago	Hawaii	State Program	9	N/A
TestAmerica Chicago	Illinois	NELAC	5	100201
TestAmerica Chicago	Indiana	State Program	5	C-IL-02
TestAmerica Chicago	Iowa	State Program	7	82
TestAmerica Chicago	Kansas	NELAC	7	E-10161
TestAmerica Chicago	Kentucky	State Program	4	90023
TestAmerica Chicago	Kentucky (UST)	State Program	4	66
TestAmerica Chicago	L-A-B	DoD ELAP		L2304
TestAmerica Chicago	L-A-B	ISO/IEC 17025		L2304
TestAmerica Chicago	Louisiana	NELAC	6	30720
TestAmerica Chicago	Massachusetts	State Program	1	M-IL035
TestAmerica Chicago	Mississippi	State Program	4	N/A
TestAmerica Chicago	North Carolina DENR	State Program	4	291
TestAmerica Chicago	Oklahoma	State Program	6	8908
TestAmerica Chicago	South Carolina	State Program	4	77001
TestAmerica Chicago	Texas	NELAC	6	T104704252-09-TX
TestAmerica Chicago	USDA	Federal		P330-12-00038
TestAmerica Chicago	Virginia	NELAC Secondary AB	3	460142
TestAmerica Chicago	Wisconsin	State Program	5	999580010
TestAmerica Chicago	Wyoming	State Program	8	8TMS-Q

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2895
500-45139

MATRIX: <u>Water</u>			ARGONNE NATIONAL LABORATORY CHAIN OF CUSTODY RECORD*				Shipping Container No.			
RECEIVING LAB: <u>Test America</u>							Shipping Info:			
PROJECT/SITE: <u>Monrill, KS</u>			ANALYSIS				ANL Field Contact (Name & Temporary Phone):			
SAMPLER(S) (Signature) <u>[Signature]</u>							REMARKS			
DATE OF COLLECTION	SAMPLE ID NUMBER(S)		Number of containers	N	i	t	r	a	t	e
3-29-2012	MRMW153X-W-30102		1	1						1 x 500ml for Total N
[Diagonal Line]										
Relinquished by (Signature) <u>[Signature]</u>			Date <u>3/29/2012</u>	Time <u>16:05</u>	Received by (Signature) <u>[Signature]</u>			Date	Time	Received by (Signature)
Relinquished by (Signature)			Date	Time	Received for Laboratory by			Date	Time	Remarks
Y	N	FOR LAB USE ONLY			*A sample is under custody if: 1. It is in your possession; or, 2. It is in your view, after having been in your possession; or, 3. It was in your possession and you locked it up; or, 4. It is in a designated secure area.					
		Custody seal was intact when shipment received.								
		Sample containers were intact when received.								
		Shipment was at required temperature when received.								
		Sample labels, Tags and COC agree.								

Argonne National Laboratory, Applied Geosciences & Environmental Mgt. Group, Environmental Research Division, 9700 S. Cass Avenue, Argonne, IL 60439

Login Sample Receipt Checklist

Client: Argonne National Laboratory

Job Number: 500-45139-1

Login Number: 45139

List Source: TestAmerica Chicago

List Number: 1

Creator: Lunt, Jeff T

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	2.3
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Environmental Science Division

Argonne National Laboratory

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Argonne, IL 60439-4843

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